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ABSTRACT

The Technical Interdisciplinary Program is a Title III, Elementary and Secondary Education Act of 1965, federally funded exemplary program. Franklin Pierce High School is the only high school in the state of Washington with a program of this nature. The Technical Interdisciplinary Program is designed to incorporate two or more disciplines into one meaningful experience. In this program, English, math, social studies, and the building trades occupations have been combined into this one course. Students are enrolled as juniors in a four hour block of time. At present, the social studies portion of the program, which is undergoing development, is taught through lecture and discussion. The information that the students are studying is concerned with the working man's place in his home, neighborhood, job, and community, and how all of these facets fit into the state, nation, and the world. The math, English, and technical portion of the program are presented through teacher constructed, individual units. The students are required to complete a written unit on a particular construction objective which incorporates certain math and English skills necessary to fully understand and master the objectives. The students then apply the knowledge gained in the construction of a scaled model of a residential home. (Author/JM)

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TIP

Technical Interdisciplinary Program

FRANKLIN PIERCE SCHOOL DISTRICT

Tacoma, Washington

UD 014 555

Revised October 1974

COMMUNICATIONS

It is the objective of communications:

1. To instill within the student a confidence and satisfaction in his understanding and accomplishment with his language and what it conveys;
2. To teach communication skills that are comparable to those of students in the regular academic program but are directed at adaptability within the building trades;
3. To help students realize individual talents and express them verbally and in writing;
4. To teach communication facility to those students who think they have a future in the building trades.

THE PRE-TEST/POST-TEST PROGRAM OF THE TECHNICAL INTERDISCIPLINARY PROGRAM

Measurement of student progress in the Technical Interdisciplinary Program is a prime means for determining the value of the program.

The pre-test/post-test program is now completely constructed in all three disciplines of the Technical Interdisciplinary Program. By the end of the school year 1971-72, statistical information will be available for evaluation of the entire program.

The following pages provide copies of the pre-test/post-test program that will be administered in carpentry, mathematics and communications in the school year 1971-72.

Note: The pre-test/post-test in mathematics is a standardized skill test published by Science Research Associates titled "Basic Skills in Arithmetic Test" by Wrinkle, Sanders and Kendel.

Supplementary evaluations are also included in this section.

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.

Pre-Test and Post-Test
CARPENTRY

Name_____

1-10 List ten (10) different factors to take into consideration when selecting a building site:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11-20 Using the proper architectural symbols, indicate the following:

11. Exterior wall

12. Exterior window

13. Garage door with apron

14. Sliding glass door

15. 110 duplex outlet

16. Overhead light

17. Interior swinging door

18. TV outlet

19. Bi-fold door

20. Switch

21-23 List the three plumbing fixtures that are found in all full bathrooms:

21.

22.

23.

24-25 Hallways are a specific width. In recent years the width has changed.

What was the old width _____, and what is the new width _____?

26. What are the features that differentiate a linen closet from a wardrobe closet?

27-30 There are four different electrical symbols found in all utility rooms. Indicate these symbols:

27.

28.

29.

30.

31. What is the size of a standard fireplace face opening?

32. How is 4" brick veneer indicated on a floor plan?

33. What is the size of a standard footing and foundation?

34. What is the size of a screened vent?

35. What is the size of crawl hole or access door?

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36. How thick is the concrete of a normal garage floor?

37. What is the proper slope of a garage floor?

38. When using a beam and decking subfloor, how far apart should the beams be located?

39. When using a [illegible] and 2-6-1 subfloor, how far apart should the plywood blocks and plates be set?

40. When using a joist floor, what is the distance between joists?

41. What is the name of the structural member that is bolted on top of the foundation?

42-47 Define the following structural members:

42. Stud:

43. Cripple:

44. Rafter:

45. Trimmer:

46. Sole plate:

47. Top plate:

48-50 What is the width and thickness of the following structural members:

48. Window and door headers:

49. Stud

50. Sole Plate

51. What is the standard height of each stud in this area?

52-53 What is the height of wooden for the following door and window rough

52. 3'0" x 6'8" Entry Doors

53. 2'6" x 6'8" Bedroom Doors

54. 16'0" x 7'0" Overhead Garage Doors

55. 2 2'6" x 6'8" Sliding Wardrobe Doors

56. 2 3'0" x 6'8" Bi-fold Doors

57. 6'0" x 4'0" Window

58. 3'0" x 3'0" Window

59-60 There are two wall sizes used in frame exit buildings in this area. Indicate these sizes.

59.

60.

61. What is the width and thickness of the material used for nailing joists?

62. Define span

63. Maximum span for nailing joists is determined by F.H.A. and other agencies. What is this span?

64. Define header

65. What is the size of the material used for header?

COMMUNICATIONS PRE-TEST/POST-TEST

Test #1

THE FOLLOWING ARE 50 TERMS THAT ARE FREQUENTLY USED IN THE COURSE AND CONSTRUCTION WORK OF THIS PROGRAM. YOU ARE TO SPELL THEM AS ACCURATELY AS YOU CAN.

1. Ridge Board
2. Fascia
3. Cornice
4. Asphalt Shingles
5. Pitch
6. Purlin
7. Gutter
8. Soffit
9. Ledger
10. Downspout
11. Aluminum
12. Ventilators
13. Frieze Board
14. Laminated
15. Panels
16. Vinyl
17. Eave
18. Galvanized
19. Veneer
20. Channel
21. Sheathing
22. Exposure
23. Coverage
24. Mineral
25. Flashing
26. Pneumatic
27. Underlayment
28. Straightedge
29. Wedge
30. Casement
31. Threshold
32. Vertical
33. Horizontal
34. Interior
35. Exterior
36. Weather
37. Preservative
38. Primer
39. Textured
40. Reflective
41. Radiation
42. Visqueen
43. Gypsum
44. Prefabricated
45. Ceramic
46. Miter
47. Enamel
48. Lacquer
49. Sealer
50. Latex

COMMUNICATIONS
Pre-Test/Post-Test

TEST #2

The following are 25 terms that are frequently used in the Technical Interdisciplinary Program. You are to define each term as accurately as you can.

1. combination square

2. miter box

3. aluminum level

4. commercial zone

5. residential zone

6. Uniform Building Code

7. building permit

8. building official

9. exterior bearing wall

10. fire-stops

11. sheathing

12. footing

13. cement

14. reinforcing rod

15. anchor bolts

16. subfloor

Test #2 continued

17. mud sill

18. joists

19. pneumatic nailer

20. girders

21. sole plate

22. cripple stud

23. header

24. rough sill

25. align

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ANSWER COLUMN

Add.

(1) 7 + 0 =

(2) 8 + 9 + 2 + 6 =

(3) 36 + 92 + 65 + 18 =

(4) 479 + 894 + 273 + 456 =

Subtract.

(5) 763 − 464 =

(6) 4730 − 4041 =

(7) 3001 − 465 =

Multiply.

(8) 0 × 8 =

(9) 789 × 67 =

(10) 945 × 308 =

(11) 820 × 40 =

Divide.
Write remainders, if any, as common fractions.

(12) $4\overline{)0}$

(13) $3\overline{)2830}$

(14) $96\overline{)76801}$

(15) $12\overline{)8526}$

Change to its simplest form.

(16) $\frac{6}{10} =$

(17) $3\frac{4}{8} =$

(18) $14\frac{3}{9} =$

Change to a mixed number.

(19) $\frac{19}{8} =$

Change to an improper fraction.

(20) $2\frac{3}{4} =$ ____

(21) $\frac{3}{5} =$ ____

(22) 7 is what part of 28?

Add.

(23) 39 + $5\frac{7}{12}$ =

(24) $15\frac{3}{4} + 12\frac{1}{2} =$

(25) $\frac{2}{3} + 4\frac{1}{3} + 5\frac{1}{4} =$

Subtract.

(26) $\frac{1}{3} - \frac{1}{4} =$

(27) 15 − $6\frac{3}{4}$ =

(28) $23\frac{1}{4} - 8\frac{2}{3} =$

For items 29 through 36, each answer should be written in its simplest form.

(29) $\frac{1}{2}$ of $\frac{1}{3} =$

(30) $24 \times \frac{3}{4} =$

(31) $\frac{1}{3} \times 5 =$

30

25

ANSWER BOX

Multiply.

(22) $15 \times 3\frac{1}{2} =$ (23) $2\frac{1}{2} \times 3\frac{1}{2} =$ 30 31

Divide.

(24) $\frac{1}{2} \div 2 =$ (25) $\frac{3}{4} \div \frac{1}{4} =$ (26) $4 \div \frac{2}{3} =$ 32 33 34

(27) Write 15 thousandths as a decimal. 35

(28) Which of the following is the way you would read .067
[six tenths] [six] [six thousandths] [six hundredths] 36

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Rearrange the numbers in the next two problems so that the largest number is first and the smallest is last.

(29) .7 .007 .07 (30) .043 .33 .3 37 38

(31) Change .9 to a common fraction. 39

(32) Change $\frac{2}{3}$ to a decimal. (Leave the remainder as a common fraction after the second decimal place.) 40

(33) $.7 \div .2 \div .9 =$ (34) $5.76 \div $25.90 \div $.49 = 41 $ 42 $ 43 $

(35) $73.60 - $7.37 = 44 $

(36) Take $8.11 from $10.00. The remainder is 45 $

(37) $3.47 \times 10 = 46 (38) $.35 \div 10 =$ 47 48

Place the decimal point correctly in the answers to the following problems. Add any zeros that may be needed.

(39) $.06 \times .9 = 54 (50) $3.73 \times .8 = $2250 49 50 $

(51)
$$25\overline{)925}$$
$$\begin{array}{r} 37 \\ 75 \\ \hline 175 \\ 175 \\ \hline 000 \end{array}$$

(52)
$$25\overline{)925}$$
$$\begin{array}{r} 37 \\ 75 \\ \hline 175 \\ 175 \\ \hline 000 \end{array}$$

51 52 53 54 55

(53)
$$.25\overline{)9.25}$$
$$\begin{array}{r} 37 \\ 75 \\ \hline 175 \\ 175 \\ \hline 000 \end{array}$$

(54)
$$2.5\overline{)9.25}$$
$$\begin{array}{r} 37 \\ 75 \\ \hline 175 \\ 175 \\ \hline 000 \end{array}$$

Change the following decimal numbers to per cents.

(55) .18 = (56) .025 = (57) 1.3 = 56 57 58

(11) Write 3% as a decimal. (11) _____

(12) Write $\frac{1}{4}$% as a decimal. (12) _____

(13) Write 102% as a decimal. (13) _____

(14) Change $\frac{1}{4}$ to per cent. (14) _____ %

(15) Change 40% to a common fraction. (15) _____

(16) How much is 2% of $3.00? (16) _____ ¢

(17) How much is 12$\frac{1}{2}$% of $140? (17) _____ ¢

(18) How much is 100% of $50? (18) _____ ¢

(19) $2 is what per cent of $20? (19) _____ %

(20) What per cent of $100 is $300? (20) _____ %

(21) Mary Sullivan loaned $300 to James Smith for six months. She charged Mr. Smith interest at the rate of 6% per year. How much was the interest on the loan? (21) _____ ¢

[illegible] PRE-TEST/POST-TEST

50 POINTS DATE _____

1. Divide 63' x 78' _____

2. Multiply 11.45 x 52 _____

3. Change 52.65 to 52 ___/___"

4. Divide 9'3" x 36" _____

5. Divide 54" by 4'3" _____

6-7. Change the following measurements to fractions that can be read on a steel tape

6. 37.44" = 37 _____"

7. 52.65" = 52 _____"

8. Find the length of a common rafter for a house with a 4 in 12 pitch and a span of 32' if the roof has a 2' overhang. _____

9. How many board feet of lumber is there in 5 - 2" x 4" x 12' long. _____

10. Find area in square feet of a rectangle with dimensions 42' x 28' _____

11. Find the area of a triangle with a base of 24' and an altitude of 16'. _____

12. Find the area of a parallelogram with a base of 24' and an altitude of 12' _____

13. Find the area of a trapezoid with bases of 25' and 30' and an altitude of 10'. _____

14. Find the number of board feet in the following lumber order.
5 - 2"x6"x12'
3 - 2x10x8'
4 - 2x12x16'

_____

[illegible]

[illegible]

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.

Evaluation: Off-Campus Supervised Work Experience
(Cooperating Agent)

Student Name_____ Date_____

by Mr. or Mrs._____ Address_____

Title of Establishment_____ Phone_____

Date of Placement_____ Hours: From_____ To _____

Duties Performed_____

_____

_____

Please check on a five point scale showing student's progress in areas noted below: (No. 5 would be excellent and No. 1 would be poor.)

	5	4	3	2	1
1. Prompt and regular attendance					
2. Courteous and cooperative					
3. Tries to follow directions					
4. Uses time well					
5. Accepts responsibility					
6. Reaching productive stage					
7. Shows interest in assignment					
8. Shows initiative					

General statement about student's general progress:_____

_____

_____

_____

Cooperating Agent_____

41

School Representative_____

FIRST YEAR

UNIT WORK

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SPECIFIC TEXTBOOK USAGE

The primary textbook:

Wagner, Willis H. Modern Carpentry. South Holland, Illinois; the Goodheart-Willcox Co., Inc., 1969.

Note: Hereafter when the students are instructed to read a specific unit in the textbook the reference is to the primary textbook.

The supplementary textbooks:

Feiler, John L. Woodworking for Industry. Peoria, Illinois: Chas. A Bennett Co., Inc., 1963.

International Conference of Building Officials. Uniform Building Code, 1967 Edition, Volume I. Pasadena, California, 1967.

U. S. Department of Housing and Urban Development, Federal Housing Administration, FHA Minimum Property Standards. Washington, D. C.: United States Government printing office, 1965.

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.

MATHEMATICS
INDIVIDUALLY PRESCRIBED UNITS

UNIT 1: WHOLE NUMBERS

OBJECTIVES: Upon completion of this unit the student will have demonstrated the ability to:

A. Read and write numerals to billions

B. Determine which of two whole numbers is larger or smaller

C. Add, subtract, multiply and divide whole numbers

D. Apply the above objectives to "word problems"

METHOD: The student will be given a teacher-made pre-test covering the stated objectives. If he passes the pre-test with a score of 95% or better, he will move into the next unit. If he fails to achieve 95% on the pre-test, the teacher will prescribe a list of assignments to meet his particular weaknesses. When the student has completed and checked the assignments in his prescription, he will take a teacher-made post-test covering the unit objectives. He must score 80% or better in order to continue to the next unit. If he fails to achieve at this level, a new prescription will be written and upon completion a second post-test will be given. If he again falls below 80%, a third prescription is given and upon completion a third post-test for which 70% accuracy is required.

RESOURCES:
1. Holt General Mathematics - Kinney, Ruble, Blythe; Holt, Rinehart & Winston, Inc., 1960.

2. Trouble Shooting Mathematics Skills - Bernstein and Wells; Holt, Rinehart & Winston, Inc., 1963.

3. Practice Problems in Mathematics - Carpentry Trades; Delmar Publishers, Inc., 1962.

100 Multiplication Facts

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10 x 4 = ___	7 x 3 = ___	5 x 10 = ___	5 x 5 = ___	3 x 2 = ___
9 x 5 = ___	4 x 6 = ___	6 x 9 = ___	10 x 0 = ___	5 x 0 = ___
2 x 3 = ___	9 x 9 = ___	10 x 2 = ___	7 x 8 = ___	4 x 1 = ___
2 x 8 = ___	8 x 6 = ___	6 x 4 = ___	8 x 2 = ___	3 x 7 = ___
10 x 10 = ___	8 x 1 = ___	5 x 9 = ___	3 x 6 = ___	9 x 4 = ___
6 x 8 = ___	10 x 9 = ___	8 x 5 = ___	4 x 10 = ___	2 x 7 = ___
10 x 3 = ___	7 x 7 = ___	5 x 4 = ___	4 x 0 = ___	3 x 1 = ___
7 x 2 = ___	6 x 3 = ___	8 x 10 = ___	4 x 5 = ___	2 x 2 = ___
8 x 9 = ___	5 x 8 = ___	3 x 10 = ___	10 x 8 = ___	7 x 6 = ___
4 x 4 = ___	2 x 1 = ___	9 x 3 = ___	6 x 2 = ___	3 x 5 = ___
9 x 10 = ___	9 x 8 = ___	7 x 1 = ___	5 x 3 = ___	3 x 0 = ___
9 x 9 = ___	8 x 0 = ___	6 x 7 = ___	4 x 9 = ___	2 x 6 = ___
9 x 7 = ___	10 x 6 = ___	7 x 10 = ___	10 x 5 = ___	8 x 7 = ___
6 x 5 = ___	3 x 8 = ___	3 x 9 = ___	2 x 0 = ___	2 x 10 = ___
5 x 6 = ___	7 x 5 = ___	7 x 9 = ___	2 x 4 = ___	6 x 1 = ___
5 x 1 = ___	7 x 0 = ___	6 x 6 = ___	7 x 4 = ___	3 x 3 = ___
4 x 3 = ___	3 x 4 = ___	4 x 7 = ___	8 x 4 = ___	10 x 7 = ___
8 x 3 = ___	6 x 10 = ___	2 x 9 = ___	4 x 8 = ___	2 x 5 = ___
2 x 5 = ___	10 x 1 = ___	8 x 8 = ___	9 x 6 = ___	6 x 0 = ___
5 x 2 = ___	9 x 2 = ___	9 x 1 = ___	4 x 2 = ___	5 x 7 = ___

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100 Division Facts

20 ÷ 10 = ___	0 ÷ 3 = ___	16 ÷ 8 = ___	42 ÷ 6 = ___	10 ÷ 2 = ___
35 ÷ 5 = ___	3 ÷ 3 = ___	21 ÷ 7 = ___	12 ÷ 2 = ___	50 ÷ 10 = ___
36 ÷ 9 = ___	18 ÷ 6 = ___	28 ÷ 4 = ___	54 ÷ 6 = ___	72 ÷ 8 = ___
15 ÷ 3 = ___	50 ÷ = ___	45 ÷ 5 = ___	9 ÷ 3 = ___	64 ÷ 8 = ___
40 ÷ 4 = ___	60 ÷ 10 = ___	14 ÷ 7 = ___	24 ÷ 8 = ___	32 ÷ 8 = ___
10 ÷ 10 = ___	24 ÷ 4 = ___	6 ÷ 6 = ___	27 ÷ 3 = ___	21 ÷ 3 = ___
20 ÷ 2 = ___	24 ÷ 6 = ___	30 ÷ 3 = ___	56 ÷ 8 = ___	36 ÷ 6 = ___
8 ÷ 2 = ___	10 ÷ 10 = ___	32 ÷ 4 = ___	40 ÷ 10 = ___	27 ÷ 9 = ___
2 ÷ 2 = ___	0 ÷ 4 = ___	30 ÷ 5 = ___	60 ÷ 6 = ___	49 ÷ 7 = ___
21 ÷ 3 = ___	72 ÷ 9 = ___	0 ÷ 9 = ___	8 ÷ 8 = ___	40 ÷ 8 = ___
48 ÷ 6 = ___	48 ÷ 8 = ___	70 ÷ 7 = ___	6 ÷ 3 = ___	15 ÷ 5 = ___
0 ÷ 5 = ___	100 ÷ 5 = ___	20 ÷ 4 = ___	63 ÷ 9 = ___	0 ÷ 10 = ___
4 ÷ 4 = ___	60 ÷ 10 = ___	4 ÷ 2 = ___	20 ÷ 5 = ___	28 ÷ 7 = ___
63 ÷ 7 = ___	25 ÷ 5 = ___	12 ÷ 3 = ___	18 ÷ 3 = ___	14 ÷ 2 = ___
80 ÷ 8 = ___	40 ÷ 5 = ___	10 ÷ 2 = ___	45 ÷ 9 = ___	0 ÷ 8 = ___
7 ÷ 7 = ___	70 ÷ 10 = ___	18 ÷ 9 = ___	16 ÷ 2 = ___	42 ÷ 7 = ___
0 ÷ 8 = ___	56 ÷ 7 = ___	10 ÷ 5 = ___	90 ÷ 9 = ___	56 ÷ 8 = ___
30 ÷ 10 = ___	24 ÷ 3 = ___	9 ÷ 9 = ___	0 ÷ 2 = ___	12 ÷ 6 = ___
81 ÷ 9 = ___	0 ÷ 7 = ___	8 ÷ 4 = ___	16 ÷ 4 = ___	6 ÷ 2 = ___
5 ÷ 5 = ___	30 ÷ 6 = ___	36 ÷ 4 = ___	35 ÷ 7 = ___	54 ÷ 9 = ___

[illegible] HIGH SCHOOL
T. E. P.

MATHEMATICS

NAME _____

Unit 1: Whole Numbers - Pre-Test

1. Write the numeral for three million, two hundred twenty-four thousand, six hundred five. _____

2. Give the place value for each of the digits in the numeral 87,455,729.

   the 8 stands for 8 x _____ the 3 stands for 3 x _____

   the 7 stands for 7 x _____ the 1 stands for 1 x _____

   the 4 stands for 4 x _____ the 2 stands for 2 x _____

   the 5 stands for 5 x _____ the 9 stands for 9 x _____

3. Add:

75	897	736 + 50 + 9 + 888 = _____
49	43	
86	671	
35	756	

4. Subtract:

87	947	93	701	405
- 52	- 505	- 79	- 259	- 398

5. Multiply:

63	359	402	475
x 27	x 83	x 71	x 509

Work it Mathematically

4. Explain:

a. $\frac{3.5 \times 10^{12}}{2.5 \times 10^{3}}$ = 1.4×10^{9} $2,000 \times 10^{3}$ = $50,250 \times 10^{-2}$ =

5. The Gutierrez [illegible] of watercolors contains how many board feet of timber?

500 cloth, 2 in. ft. each

50 gliders, 10 in. ft. each

50 boats, 80 in. ft. each

6. A container has 1,000 square feet of shingles to lay. He gets down 300 sq. ft. the first day, 450 sq. ft. the second day, and 200 sq. ft. the third day. How many square feet has he left to get done?

[illegible]

[illegible]

Topics: [illegible]
[illegible]
[illegible]

[illegible]

[illegible] 5. [illegible] page 5-2

[illegible] 6. [illegible] page 6-1
[illegible] page 6-2

[illegible] 7. [illegible] page 7-1

[illegible] 8. [illegible] page 8-1
[illegible] page 8-2

[illegible] 9. [illegible] page 9-1

[illegible] 10. [illegible] page 10-1
[illegible] page 10-2

[illegible] 11. [illegible] page 11-1
[illegible] page 11-2

[illegible] 12. [illegible] page 12-1
[illegible] page 12-2

[illegible] 13. [illegible] page 13-1

[illegible] 14. [illegible] page 14-1
[illegible] page 14-2
[illegible] page 14-3
[illegible] page 14-4
[illegible] page 14-5

15. Test

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]													
[illegible]													

[illegible]

[illegible]

[illegible]

Unit One: Communications Terminology NAME_____

____ T-BEVEL	1. Sawing with the grain of the wood
____ ALUMINUM LEVEL	2. Sawing across the grain of the wood.
____ SABER SAW	3. A machine that squares the edges of boards
____ CROSSCUTTING	4. A saw which has the motor and blade carried on an overhead arm.
____ TRANSIT	5. A power-driven sanding machine that rotates the sandpaper in a horizontal circle.
____ AUTOMATIC SCREWDRIVER	6. A steel layout tool cut at right angles, measuring 24" on one arm and 16" on the other arm; it has measured scale on all edges.
____ JOINTER	7. A telescopic instrument that is used for sighting levelness and straightness
____ MITER BOX	8. A saw and metal box that aids in cutting miters and joints.
____ RIPPING	9. The procedure of inserting waterproof material in cracks and joints
____ ROUTER	10. A devise that drives metal staples through a material to attach it to another material.
____ CLAW HAMMER	11. A leveling instrument used to check and layout vertical and horizontal lines
____ ORBITAL SANDER	12. A pointed weight attached to a string that when hung suspended determines true vertical lines
____ SKIL SAW	13. A tool that has a handle attached to a sharp blade and is used to trim away stock.
____ CAULKING	14. A pounding instrument that has two claws on one side for pulling nails from wood.
____ PLUMB BOB	15. A portable electric saw with a circular blade that is used for sawing boards or panels.
____ PORTABLE ELECTRIC DRILL	16. A portable electric saw that is used for small detailed work
____ RADIAL ARM	17. A drill supplied with various sized bits that are used for drilling holes in wood.
____ STAPLER	18. A power-driven machine with a bit that is used to cut irregular shapes, contours, and edges.
____ CARPENTER'S SQUARE	
____ CHISEL	

19. A screwdriver that rotates automatically when pressure is applied to the handle end.

20. A tool that is used to pick up and transfer various angles.

UNIT 2: FRACTIONAL NUMBERS

OBJECTIVES: Upon completion of this unit the student will have demonstrated the ability to:

A. Read and write fractional numerals

B. Determine which of two fractional numbers is larger or smaller

C. Change fractions to equivalent fractions with larger or smaller denominators

D. Add, subtract, multiply and divide fractional numbers

E. Apply the above objectives to "word problems"

METHOD: The student will be given a teacher-made pre-test covering the stated objectives. If he passes the pre-test with a score of 95% or better, he will move into the next unit. If he fails to achieve 95% on the pre-test, the teacher will prescribe a list of assignments to meet his particular weaknesses. When the student has completed and checked the assignments in his prescription, he will take a teacher-made post-test covering the unit objectives. He must score 80% or better in order to continue to the next unit. If he fails to achieve at this level, a new prescription will be written and upon completion a second post-test will be given. If he again falls below 80%, a third prescription is given and upon completion a third post-test for which 70% accuracy is required.

RESOURCES: 1. Vocational and Technical Mathematics in Action - Samuel Levine; Heyden Book Company, 1969.

2. Holt General Mathematics - Kinney, Ruble, Blythe; Holt, Rinehart & Winston, Inc., 1960.

MATHEMATICS

NAME: _____

UNIT 2: Fractions - Pre-Test

1. Using numerals write each of the following:

   a) five-sixteenths

   b) three and three-eighths

   c) five feet six and one-fourth inches

2. Reduce each to lowest terms

   a) 6/16 = _____ b) 8/32 = _____ c) 4/8 = _____

3. In each pair, determine which is larger:

   a) 5/8 or 7/8 b) 5/16 or 1/4 c) 12/32 or 3/8 d) 3 5/8 or 3 11/16

4. Do the indicated operation - reduce answers to lowest terms.

   a) 3/4 + 1/4 + 3/4 =

   b) 3/4 + 1/2 + 7/8 =

   c) 2 1/4 + 3 5/8 + 3/4 + 3 1/4 =

   d) 1 5/8 + 1 5/8 =

   e) 13/16 - 7/16 =

   f) 2 1/4 - 7/8 =

   g) 16 - 12 5/8 =

   h) 5/8 x 2/16 =

   i) 4 x 2 3/8 =

   j) 1 3/8 x 3 =

   k) 1 7/8 x 2 3/4 =

   l) 3' 4 5/8" x 12 =

   m) 3 5/8 ÷ 3/4 =

   n) 25' 8¼" ÷ 6 =

5. A carpenter was given 16 hours to do a particular job. He worked on the job 5 different times as shown: 1/2 hour, 1 1/2 hours, 7 3/4 hours, 1 1/4 hours, and 3/4 hour. How long does he have to finish the job?

6. Joe works 1 1/4 hours each day after school and 4 1/2 hours on Saturday cleaning a small store. If he earns $1.60 an hour, what is his weekly salary?

7. A carpenter needed the following lengths of 2" x 4" for backing: 15 3/4", 15 5/8", 32 1/2", and 18 5/16". Allowing 1/16" for each saw cut, can he cut all the pieces from an 8' 2 x 4? If "yes", how much is left over or, if "no", how much longer than 8' would the 2 x 4 have to be?

MATHEMATICS

NAME: _____

UNIT 7: Fractions

Assignments

Texts: (1) Vocational and Technical Mathematics in Action
(2) General Mathematics

Concept

Exact & Approximate Numbers — 1. (1) Read page 1-2
Do problems 3-7, 10, page 3

Reducing — 2. (1) Read page 4-5
Do problems 1-16, page 5

Reading a ruler — 3. (1) Read pages 5-6
Do problems 1-7, pages 6-7

Comparing — 4. (2) Page 119, do 3-6
Read page 120

Equivalent fractions — 5. (2) Page 122, section A 1-12, section B 1-16

Common Denominator — 6. (1) Read pages 8-10
Do problems 1-4, page 10

Addition — 7. (1) Read pages 10-11
Do problems 1-10, pages 11-12

Addition — 8. (1) Do problems 1, 2, 5, 6, page 12

Subtraction — 9. (1) Read pages 12-15
Do problems 1, 3, 5, 7, 9, 11, 13-14, page 16

Multiplication — 10. (2) Page 134 000 Problems 1-17

Multiplication — 11. (2) Page 135 Section B
Page 136 Section C #2, 4, 9, 14
Page 136 Section D #1, 4, 7, 10

Multiplication — 12. (1) Page 21-22
Do problems 3, 4, 7, 10, 11

Division — 13. (1) Read pages 22-24
Do [illegible] exercises, page 25

Measurement — 14. (1) Read pages 26-28
Do exercises 1, 3, 5, 7, page 27
Do exercises 1-5, page 28
Do problems 1-3, page 28

Measurement — 15. (1) Study multiplication and division, page 28-29
Do exercises [illegible], 5, 10, 12, page 30
Do problems [illegible], 2, page 30

16. Test -35-

[illegible]

[illegible] Fractions

[illegible]: _____

[illegible]	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
[illegible]	29	30	10	11	28	18	8	11	5	3	14	11	28	
[illegible]														
[illegible]														

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

1. [illegible]

[illegible]

2. [illegible]

a) [illegible]

3. [illegible]

a) [illegible]

[illegible]

Math 116 3 continued

Name _____

4. Two tech-prep cooking unit spans 3 1/2 inches. How many inches will an engineer in-law a unit that is 17 1/2 high?

5. There are 12 chairs in the chairs that are available in the first floor of a theatre. If the height of the backrest of the chairs are 3 1/2 inches high

6. How much fencing is a 150 unit does an 80 unit if the heights are 32' and 21' respectively?

7. A branch is 12.7 wide. The distance on the 20 unit an approximate centerline the top of fencing of a 5.25' plenty, a 5.1 plenty, a 5.25' plenty, and a 5.25' plenty. How much expansion of the different beams in 1/32' was provided for each unit?

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UNIT TWO: Selecting an Adequate Building Site

OBJECTIVE: Upon completion of this unit each student will be able to evaluate a prospective building site and determine its adequacy for construction.

RESOURCE MATERIALS:

1. Mineographed information:

   a. Fourteen factors
   b. Detailed questions
   c. Communications terminology
   d. Evaluation charts

STUDENT RESPONSIBILITY:

A. 1. Study and understand 14 factors.

B. 1. Understand and be able to define terminology.

C. 1. Evaluate a site near the school:

   a. Complete evaluation chart; submit for grading.

   2. Evaluate a site that is for sale:

   a. Complete evaluation chart; submit for grading.

   3. Evaluate a site that is not for sale but may be purchased:

   a. Complete evaluation chart; submit for grading.

D. 1. Be prepared for testing:

   a. Communications terminology

14 FACTORS TO CONSIDER WHEN SELECTING A BUILDING SITE

1. The neighborhood
2. Adjacent lots
3. Topsoil (quality and drainage)
4. Neighbors
5. Transportation
6. Churches, schools, and shopping centers
7. Sewers, septic tanks, types of streets, gas mains, powerlines
8. Zoning
9. Deed restrictions
10. Traffic
11. Site shape (size)
12. Site layout
13. Site cost (14% of total cost)
14. Financing agent

FACTORS TO CONSIDER WHEN SELECTING A BUILDING SITE

(Before you try to find answers to the following: The many questions under each of the 14 factors are included as guidelines. To find a site which would satisfy every question should be considered all but impossible. When evaluating a site, the builder or prospective owner should try to find answers for as many as possible. Even then there may be personal preferences which would rule out certain questions and their answers.)

1. The neighborhood:

   a. What are the ages and styles of the houses already there?
   b. What is the age and condition of the streets, sidewalks, lighting, and sewers?
   c. Is it a deteriorating neighborhood?
      1. Are there visible piles of trash and throwaways?
      2. Are there unrepaired and unpainted houses and fences?
      3. Are there poorly maintained yards?
   d. Does it appear to be an up-to-date, progressive young neighborhood?
   e. Does the closeness of shopping centers, schools, public and commercial industries affect traffic, peace-and quiet?

2. Adjacent lots:

   a. What is the kind, age, heighth, and condition of nearby houses?
   b. If adjacent lots are not occupied:
      1. Are they dumping ground for refuse?
      2. Are they brushy?
      3. Are they swampy?
      4. Are they play areas for children?

3. Topsoil:

   a. Is there good drainage year around?
   b. What is the depth of the water-table during rainy seasons?
   c. What is the depth and quality of the topsoil?
   d. Is the site leveled with fill dirt?

4. Neighbors:

   a. What is the approximate age of the adults?
   b. Are there many children and pets?
   c. Are there visible outside signs of the social status of the neighbors?
   d. Is the neighborhood integrated or segregated?
   e. What are the possible social relationships?

5. Transportation:

   a. Are bus services available, close by, nonexistent?
   b. Is the site easy to drive to?
   c. Is the site difficult to get onto in the winter?
   d. What is the amount of traffic, and what are the speed limits on nearby streets?
   e. Does the local government have plans for improvement or development of the neighborhood streets?

6. Churches, schools, and shopping centers:

   a. Are churches of personal faith nearby?
   b. Are elementary schools within easy walking distance for children?
   c. Are junior high schools within reasonable distance?
   d. Are high schools within reasonable distance?
   e. Are shopping centers within walking distance for young children?
   f. Are other commercial services available?
   g. Are (or will) property taxes affected by closeness of shopping centers?
   h. Is the local government planning on nearby commercial development?

7. Sewers, septic tanks, types of streets, curbs, gas mains, powerlines:

   a. How long has it been since these facilities were installed?
   b. Can they be expected to be installed in the near future with subsequent rising of taxes?
   c. Will purchase of the site require special sewer services?
   d. Is septic tank installation prohibited or restricted?

8. Zoning:

   a. Is it a permanently zoned residential area?
   b. Are there options in existence that may open the neighborhood up for commercial development?

9. Deed restrictions:

   a. Are there restrictions, liens, unknown factors that should be investigated by legal officers, surveyors, assessors?

10. Traffic:

    a. (Refer to Transportation, Schools, Shopping Centers)

11. Site shape:

    a. Can this determine the architecture of the house?
    b. Will there be adequate "open space" after construction?

12. Site layout:

    a. Does the site have varied elevations, slopes, streams, drop-offs?

13. Site cost:

    a. Is there an official assessed valuation of the site?
    b. Are there any hidden costs? (Refer to #7 and #9 above)

14. Financing agents:

    a. Have they seen the site?
    b. Have they provided counseling, advice?
    c. Is the firm reputable?

Franklin Pierce High School
T. I. P.

Unit Two: Communications Terminology

The following terms are provided with definitions. You are expected to study them and be prepared for testing on the spelling of selected terms and definitions of selected terms.

1. building site: a site that is at least two lots, and a house can be built on it.

2. elevation: the grade level from the lowest point to the highest point of a building site.

3. neighborhood: the area surrounding the building site for approximately 1/4 mile in all directions.

4. adjacent lots: those lots directly in front, in back, and on both sides of a building site.

5. topsoil: the soil that is the top layer of soil on a building site before construction begins.

6. transportation: auto traffic on, to, from, and around the building site.

7. restrictions: limitations that are placed upon the use of a building site and the building upon it.

8. site shape: the boundry outline of a building site.

9. site layout: the various elevations, natural growth, and obstructions on a building site.

10. commercial zone: an area that is zoned by the local government for business purposes.

11. industry: manufacturing industries near a building site.

12. facilities: commercial and recreational services near a building site.

13. sewer line: underground pipes that carry sewage to a public disposal area.

14. residential zone: an area that is zoned by the local government for home building only.

15. lien: when a building site cannot be bought free and clear because money is owed and somebody charges it to the property.

16. [illegible] a representative of the local government who determines the correct boundry lines of a building site.

17. [illegible] a representative of the local government who determines the true value of a building site.

18. [illegible] money borrowed to purchase a building site and materials to build a structure.

19. Lot: an area measuring 25' x 125'.

20. [illegible] the space on a site, surrounding a structure that allows freedom of movement and is adequate for health and safety.

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EVALUATION OF A SITE SITE

The purpose of this exercise is to put the theory of site selection to practical use. You are to evaluate the selected site. You are not to come under anything other than the factors listed below. Try not to let your personal preferences influence your analysis.

After each factor there are a series of boxes. Each box is identified as POOR, FAIR, GOOD. Think to give a box for COMMENTS. Evaluate the site with each of the points listed below. Take into consideration the questions we dealt with to help you determine how you should mark each factor. If there is a particular reason for your mark, or if there is a factor not mentioned which affects the kind of mark given, make a written comment in the comment box. Mark your final decision at the bottom and sign your name.

FACTOR	POOR	FAIR	GOOD	COMMENTS
The neighborhood				
Adjacent lots				
Topsoil				
Neighbors				
Transportation				
Churches, schools, shopping centers				
Sewers, curbs, gas mains, provisions				
Zoning				
Deed restrictions				
Traffic				
Site shape				
Site layout				

DECISION: Site approved for construction _____

Site not approved for construction _____

Signature _____

74 75

[redacted]

Practice worksheet

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

5. Swinging door:

6. Sliding wardrobe door:

7. Shelf and pole:

8. Bi-fold door:

9. Sliding glass door:

10. Pocket door:

11. Overhead garage door:

12. Apron:

13. Vanity sink:

14. Bathtub:

15. Shower:

16. Toilet:

17. Fan:

18. Kitchen sink:

19. Dishwasher:

20. Range:

21. Refrigerator:

22. Lower kitchen cabinets:

23. Upper kitchen cabinets:

24. Furnace (gas or oil):

25. Hot water tank:

26. Washer:

27. Dryer:

28. Laundry tray:

29. Fireplace:

30. 110 duplex outlet:

31. Switch:

32. 220 outlet:

33. Waterproof duplex outlet:

34. TV outlet:

35. Telephone jack:

b. Bedroom:

1. Window & size:

2. Door & size:

3. Closet & door size:

4. Shelf & pole:

5. Switches:

6. Overhead lights:

7. Duplex outlets:

c. Bathroom:

1. Door & size:

2. Window & size:

3. Toilet:

4. Vanity sink:

5. Medicine cabinet:

6. Bathtub:

7. Shower:

8. Fan:

9. Closet (storage & linen):

10. Lights:

11. Switches:

12. Duplex outlets:

d. Hallway:

1. Width:

2. Closets (linen or wardrobe):

3. Overhead lights:

4. Switches:

5. Duplex outlets:

6. Door chimes:

7. Cold air return (oil or gas):

8. Thermostat:

e. Living Room:

1. Window and size:

2. Fireplace:

3. Entrance to living room:

4. Lights:

5. Switches:

6. Duplex outlets:

f. Fireplace:

1. Hearth:

2. Fireplace face (brick or stone):

3. Firebox size (30" x 36" x 16"):

4. Fireplace size (4' x 6'):

g. Dining Room:

1. Door & size:

2. Window & size:

3. Overhead lights:

4. Duplex outlets:

5. Switches:

h. Foyer:

1. Door & size:

2. Coat closet:

3. Shelf & pole:

4. Floor covering:

5. Overhead lights:

6. Switches:

7. Doorbell & transformer (where installed):

i. Family Room:

1. Entrance:

2. Fireplace:

3. Overhead lights:

[illegible]

[illegible]

2. Foundation Plans

a. Using the proper architectural symbols and conventions, indicate the following:

1. Footings

a. Standard:

b. Brick veneer:

2. Foundations

a. Standard:

b. Brick veneer:

3. Block-outs

a. Screened vents (size):

b. Access door (size):

c. Entrance doors:

4. Location of reinforcing rods

a. Porches:

b. Patios:

5. Concrete garage floor and apron:

6. Concrete footing blocks:

7. Fireplace footing:

8. Support posts:

9. Beams or girders:

10. Subflooring

    a. Joist floor:

    b. Beam & decking:

    c. Beam & 2-4-1:

11. Ground cover:

b. All pertinent dimensions will appear on the foundation plan:

    1. Overall dimensions

    2. On center dimensions of beams and posts

    3. Garage door opening

    4. Footing and foundation sizes

c. Sheet name and scale will be indicated.

d. Upon completion of this portion of Unit Three, each student will be required to successfully pass a foundation plan examination.

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Unit III: Foundation Plans Explanation Name_____

1. What is the size of a standard footing?

2. What is the size of a standard foundation?

3. What is the size of a footing when brick veneer is used?

4. What is the size of a foundation when brick veneer is used?

5. What is the size of a screened vent?

6. What is the size of an access hole?

7. Define block-out.

8. What is the purpose of reinforcing rods?

9. How is the concrete garage floor indicated on a plan?

10. What is the notation for ground cover?

11-13. Name three common subfloor types:

11.

12.

13.

14. What is the size of opening in the garage foundation when using a 9⁰ x 7⁰ O.H. Gar. Dr.?

15. When cantilevering is used, how is it indicated on the foundation plan?

16. Using the proper symbol, indicate a footing and foundation.

17. Using the proper symbol, indicate a footing and foundation with brick veneer.

18. What is the standard size of footing block?

19. What is the size of the beams when cardecking is used?

20. What is the size of the beams when 2-4-1 plywood is used?

21. What is the size of the posts when cardecking is used?

22. What is the standard spacing of posts when cardecking is used?

23. What is cross bridging and where is it used?

24. What is solid bridging and where is it used?

25. What type of house requires joist floor construction?

3. Elevations

a. Using the proper architectural symbols and conventions indicate how much of the following is drawn:

1. Front and right elevations

2. Rear and left elevations

a. Grade lines

b. Concrete foundation

c. Concrete porches, steps and patios

d. Position and style of doors, windows and overhead garage doors

e. Type of siding

1. Vertical

2. Horizontal

f. Brick veneer

g. Roof style

1. Gable

2. Hip

3. French Hip

4. Mansard

[illegible]

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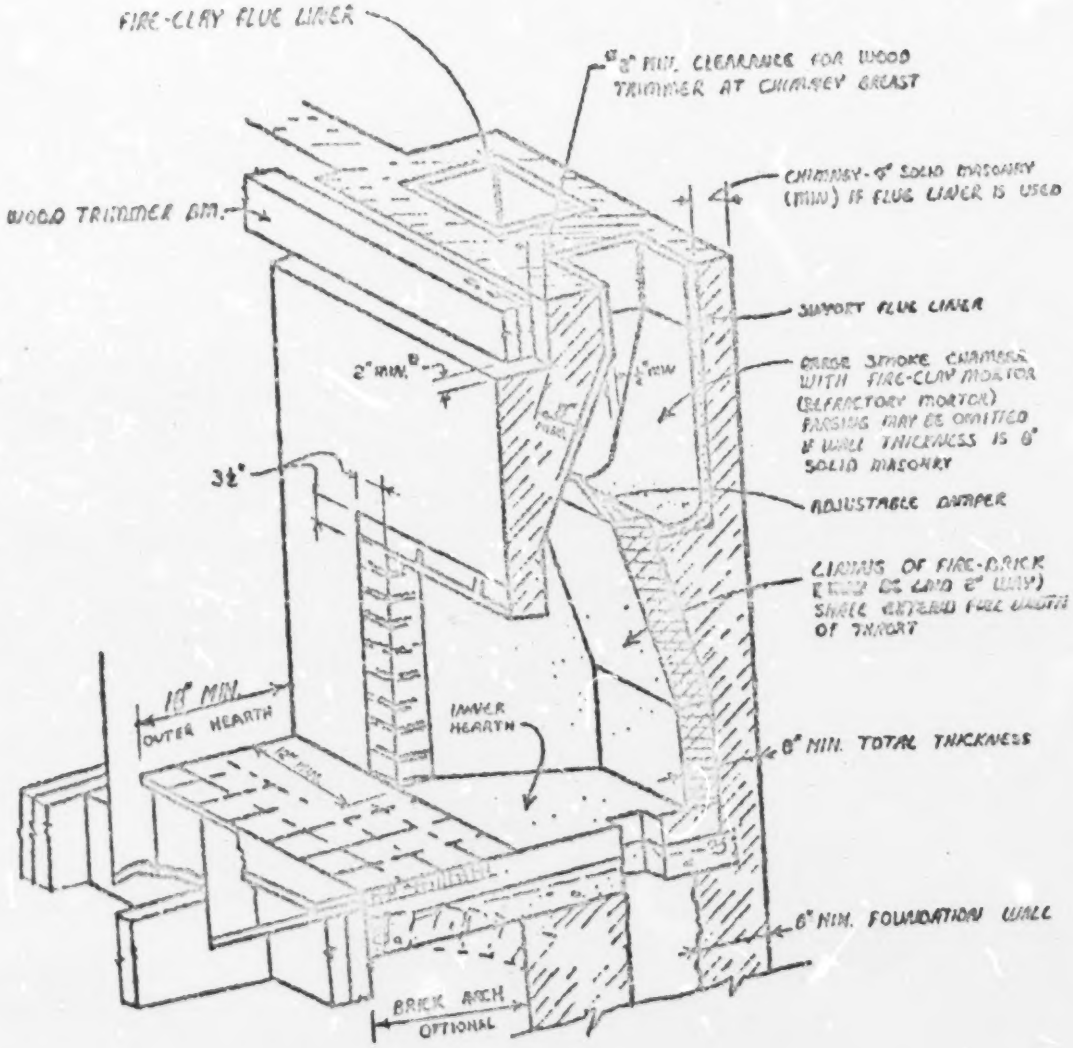
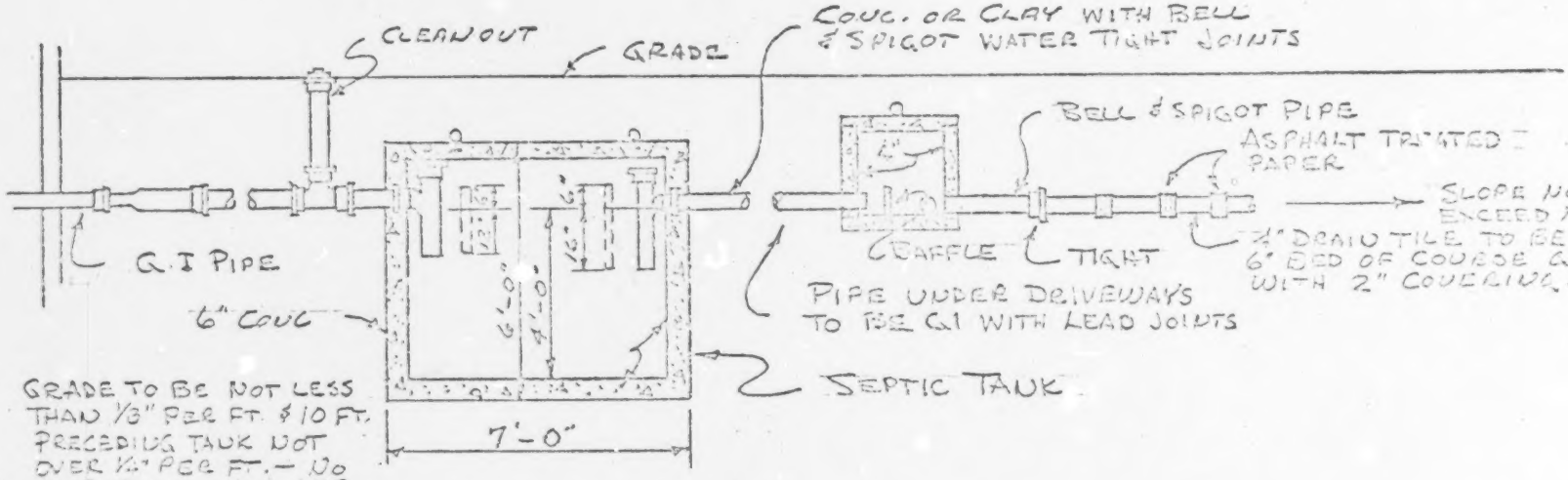

FIRE-CLAY FLUE LINER
8" MIN. CLEARANCE FOR WOOD TRIMMER AT CHIMNEY BREAST
CHIMNEY - 8" SOLID MASONRY (MIN) IF FLUE LINER IS USED
WOOD TRIMMER BM.
SUPPORT FLUE LINER
2" MIN.
SMOKE CHAMBER WITH FIRE-CLAY MORTAR (REFRACTORY MORTAR) PARGING MAY BE OMITTED IF WALL THICKNESS IS 8" SOLID MASONRY
32"
ADJUSTABLE DAMPER
LININGS OF FIRE-BRICK (MAY BE LAID 8" WAY) SHALL EXTEND FULL DEPTH OF THROAT
18" MIN.
OUTER HEARTH
INNER HEARTH
8" MIN. TOTAL THICKNESS
8" MIN. FOUNDATION WALL
BRICK ARCH OPTIONAL

[1] PROVIDE NOT LESS THAN 8" OF SOLID MASONRY AS INDICATED BETWEEN SMOKE CHAMBER AND FACE OF CHIMNEY BREAST WHEN WOOD TRIMMER IS USED

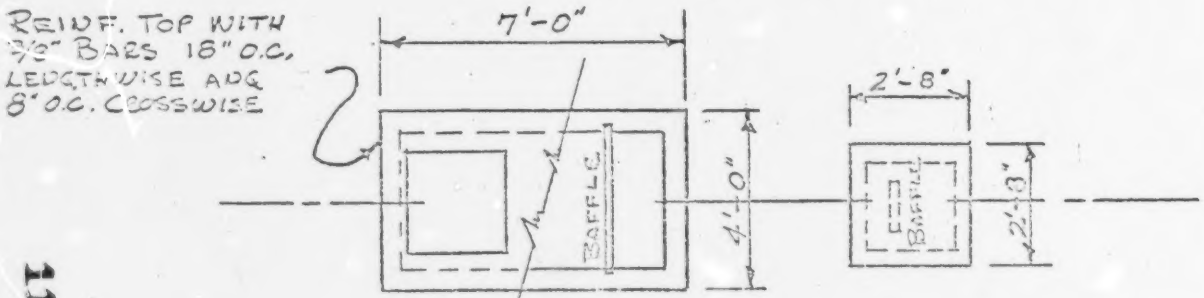
EXAMPLE: MASONRY FIREPLACES 814-9


CLEANOUT
GRADE
CONC. OR CLAY WITH BELL & SPIGOT WATER TIGHT JOINTS
BELL & SPIGOT PIPE
ASPHALT TREATED PAPER
SLOPE NOT TO EXCEED ½" IN 10'-0"
¾" DRAIN TILE TO BE LAYED ON 6" BED OF COURSE GRAVEL WITH 2" COVERING.
BAFFLE
TIGHT
G.I PIPE
6" CONC
6'-0"
4'-0"
PIPE UNDER DRIVEWAYS TO BE GI WITH LEAD JOINTS
SEPTIC TANK
7'-0"
GRADE TO BE NOT LESS THAN ⅛" PER FT. & 10 FT. PRECEDING TANK NOT OVER ½" PER FT. — NO 90° ELLS — ALL 45° ELLS TO HAVE CLEANOUTS.

- 105 -

° SEPTIC TANK & DIST. BOX SECTION °

COMPLY WITH SECTION 1103-63 M.P.S.



° SEPTIC TANK & DIST. BOX PLAN °

SCALE ¼" = 1'-0"

110

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Unit III: Elevations Examination Name _____

1-12. Directions: Using the plan that you have before you, list twelve different features that appear on the elevations of all construction plans. If the item is metal or wood, indicate type of wood or metal. Be specific.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13-17. There are six different roof styles that we have discussed in class. List five of these roof styles.

13.

14.

15.

16.

17.

18-21. There are four individual detail drawings on 9 x 11 paper attached to all construction plans. List these four drawings.

18.

19.

20.

21.

111

22. What is the scale in which elevation drawings are done?

23-26. There are usually two elevation sheets on a construction plan showing all four elevations. In what order are these drawn?

23.

24.

25.

26.

BONUS:

27-30. As usual on an examination, I may have forgotten an important item. If you can name one item that I have forgotten to include on this exam, I will give you four bonus points. Check elevations very closely and find one if you can.

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UNIT TITLE: Interpreting and Applying Various Building Codes Used In This Area

OBJECTIVE: Upon completion of this unit each student will have knowledge of the various building codes that regulate dwelling construction in this area.

RESOURCE MATERIALS:

1. Textbook: Uniform Building Code, 1967 Edition, pages 5-8
2. Verifax copies: F.H.A. Minimum Property Standards, pages 1-4
3. Mimeographed copies of Communications Terminology

STUDENT RESPONSIBILITY:

A. 1. Define terms that are important in this unit.

B. 1. Be able to read and intelligently discuss each section of the Legal Requirements, pages 5-8.

C. 1. Refer to the supplementary paper which details the necessary important points in each section.

D. 1. Convert each important point into a well-written sentence that is of your vocabulary. Upon completion, submit for grading.

E. 1. Be prepared for test upon terminology.

2. Be prepared for testing upon important points you have written into sentences.

Supplementary Paper for Unit Four

NOTE: Each of the twelve sections is included in the list below. After each you will see a number. This number indicates the number of important points that must be written into sentence form. Thus, if a section has 3 written after it, you must find 3 important points and write them into 3 separate sentences. You will receive help from the teacher as you do this.

1. Building Permit - 3
2. Double Fees - 2
3. Penalties - 3
4. Information on Plans and Specifications - 4
5. Inspection Record Card - 2
6. Approvals Required - 6
7. Location on the Lot - 2
8. Windows - 4
9. Ceiling Heights - 2
10. Room Sizes - 5
11. Sanitation - 4
12. Private Garages - 3

[illegible] BEST COPY AVAILABLE

[illegible]

[illegible]

The following terms are provided with definitions. You are required to study them and be prepared for testing on the spelling of selected terms and definitions of technical terms.

1. Uniform Building Code: A booklet distributed by a local government that sets forth required standards for safe construction of dwelling units.

2. F.H.A. Minimum Property Standards: Federal housing publications that set forth the minimum standards to be met when building a dwelling unit in the United States.

3. Application Form: A detailed form to be filled out by a prospective builder when applying for a building permit.

4. Building Permit: A permit issued by a local government allowing a person to begin work on a building site.

5. Building Official: A representative of a local government who personally supervises and controls building under his jurisdiction.

6. Double Fees: A penalty assessed a builder who begins construction before he receives a building permit.

7. Penalties: Legal punishment by a local government when a builder violates a provision of the Uniform Building Code.

8. Misdemeanor: A minor crime committed by a builder when he violates a provision of the Uniform Building Code.

9. Provisions of the Code: The ordinances, rules and regulations of the Uniform Building Code.

10. Plans and Specifications: Detailed drawings and factual information illustrated on paper or cloth to show that a proposed structure conforms to the Code.

11. Laws, Ordinances, Rules, and Regulations: Controls and restrictions established by a local government that regulate construction.

12. Plot Plan: The blueprint drawing that shows the location of structures that are to be built on a building site.

13. Inspection Record Card: A card that is posted on a building site and is filled in by the building official after each inspection of the work.

Fig

[illegible]

[illegible]

Purpose

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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UNIT FIVE: Building Materials

OBJECTIVE: Upon completion of this unit, each student will have knowledge of the various construction materials used in this area.

RESOURCE MATERIALS:

1. Textbook (Unit 4)
2. Classroom resource materials
3. Resource Center

STUDENT RESPONSIBILITY:

A. 1. Read textbook, Unit 4

2. Utilize all resource materials including F.H.A. and city-county codes.

B. In a written report, discuss the following:

1. Differences between softwoods and hardwoods
2. Cutting methods
3. Lumber seasoning processes
4. Lumber defects
5. Hardwood and softwood grades
6. Lumber sizes (refer to table on page 456)
7. Plywood construction and types
8. Hardboard and particle board construction and uses
9. Identify and indicate uses of the following construction lumber used in this area:

   a. Douglas Fir
   b. Western Hemlock
   c. Western Red Cedar
   d. Redwood

10. Identify and indicate uses of the following finished lumber used in this area:

    a. Birch

b. Philippine Mahogany
c. Black Walnut
d. Sugar Pine

11. There are two basic sizes of nails used in fastening construction materials. Indicate sizes and where used.

12. Upon completion, submit for grading.

C. Located within the classroom are several samples of various building materials used in this area. Each student should be able to identify and indicate uses of the majority of these materials.

D. Request lumber identification and uses examination.

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Unit five: Building Materials Exam NAME:_____

1-2. There are two major classifications of lumber. Name them.

1._____

2._____

3. The answer to number one comes from a _____bearing tree.

4. The answer to number two comes from a _____bearing tree.

5-6. There are two methods of sawing lumber. Name them.

5._____

6._____

7. Define moisture meter.

8-9. There are two methods of seasoning lumber. Name these.

8._____

9._____

10-15. Match the following statements to the correct lumber defect.

_____Knots

_____Pitch Pockets

_____Splits & Checks

_____Wane

_____Decay

_____Holes

10. They may be made by wood boring insects or worms.
11. A separation of the wood fibers along the grain.
12. A disintegration of wood fibers due to fungi.
13. Caused by an imbedded branch or limb of the tree.
14. The presence of bark along the edge of a board.
15. Internal cavaties that contain a sticky substance.

16-19. There are four basic types of construction lumber used in this area. Name them.

16._____ 18._____

17._____ 19._____

20-23. There are four basic types of finish lumber used in this area. Name them.

20._____ 22._____

21._____ 23._____

24. Define plywood.

25. Define particle board.

26-27. Metal fasteners used in rough carpentry procedures in this area come in two sizes. Name them.

26._____d.

27._____d.

Lumber Identification & Uses

Directions: Several pieces of building materials are being passed around the class. Each is numbered according to the numbers on your test paper. Identify each as to name, type and use in building construction.

NAME	TYPE	USES
28._____	29._____	30._____
31._____	32._____	33._____
34._____	35._____	36._____
37._____	38._____	39._____
40._____	41._____	42._____
43._____	44._____	45._____
46._____	47._____	48._____

49. Our models are constructed from what type lumber?_____

50. The seats that you are sitting in have what type of wood tops?

_____.

UNIT 6: MEASUREMENT

OBJECTIVES: Upon completion of this unit the student will have demonstrated the ability to:

A. Read a ruler or steel tape to the nearest thirty-second of an inch.

B. Recognize geometric shapes

1. Triangle

a. Right
b. Isosceles
c. Equilateral

2. Rectangle

3. Square

4. Parallelogram

5. Trapezoid

6. Hexagon

7. Octagon

8. Circle

9. Cube

10. Rectangular Solid

11. Cylinder

C. Use the necessary formula to find perimeters, areas and volumes of appropriate figures in objective B.

D. Determine the number of board feet in a given piece of lumber.

E. Apply the above objectives to "word problems"

METHOD: The student will be given a teacher-made pre-test covering the stated objectives. If he passes the pre-test with a score of 95% or better, he will move into the next unit. If he fails to achieve 95% on the pre-test, the teacher will prescribe a list of assignments to meet his particular weaknesses. When the student has completed and checked the assignments in his prescription, he will take a teacher-made post-test covering the unit objectives. He must score 80% or better in order to continue to the next unit. If he fails to achieve at this level, a new prescription will be written and upon completion a second post-test will be given. If he again falls below 80%, a third prescription is given and upon comletion a third post-test for which 70% accuracy is required.

Unit 1 continued:

RESOURCES: 1. Applied Math - Franklin Pierce School District, 1968.

2. Practical Problems in Mathematics - Carpentry Trades; Delmar Publishers, Inc., 1967.

3. Holt General Mathematics - Kinney, Noble, Blythe; Holt, Rinehart & Winston, Inc., 1968.

[illegible]

[illegible]

NAME: _____

PRE-TEST

[illegible]

1.

Perimeter = _____

Area = _____

2.

Perimeter

Perimeter = _____

Area = _____

3.

Area = _____

Circumference = _____

4.

Area = _____

5.

Volume = _____

6. Find area & perimeter of this figure:

Area = _____

Perimeter = _____

[illegible]

[illegible]

[illegible]

Assignments

Topics: [illegible]

Concept

Formation

1. [illegible]

Array Formation

2. [illegible]

Insert Task

3. [illegible]

Array

4. [illegible]

Permutation and Arrays

5. [illegible]

Permutation and Arrays

6. [illegible]

Software

7. [illegible]

Software

8. [illegible]

9. Task

Assignment	1	2	3	4	5	6	7	8	Total
Number of Problems	8	10	10	3	14	12	10	3	
Number Correct									
Date Finished									

[illegible]

[illegible] Name _____

[illegible]

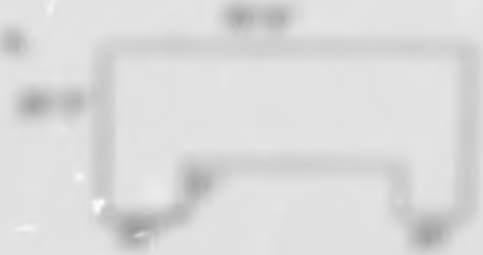
[illegible]

1.

2.

3.

4.



5.

6. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[redacted]

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.

UNIT SIX: Footings and Foundations

OBJECTIVE: Upon completion of this unit each student will have knowledge of and experience in the construction of footing and foundation forms, pouring of concrete, and stripping forms.

RESOURCE MATERIALS:

1. Textbook (Unit 6)
2. Classroom resource materials
3. Resource Center
4. On-site construction through independent study

STUDENT RESPONSIBILITY:

A. 1. Read unit in textbook

2. Study plan and F.H.A./city-county codes

3. Use all necessary resource materials to obtain desired information.

B. 1. Complete Unit 6, Math Review. Submit for grading.

2. Complete Unit 6, Communication Terminology. Submit for grading. Be prepared for testing before Formal Summary.

C. In a written report, discuss the following:

1. F.H.A. and city-county codes pertaining to footings and foundations.

2. Discuss sizes of footings for various types of construction. Indicate type and size of footings for your plan.

3. Discuss sizes of foundations for various types of construction. Indicate type and size of foundation for your plan.

4. There are several methods used in the construction of footing and foundation forms. Two of the most common methods used in this area are on display in the classroom. Using scaled balsa wood construct a corner section of both of these types. Make each side of the cornice 16" in length.

5. There are various blockouts required in the foundation forms. Indicate what these are, sizes, and where located in relation to your plan.

6. Your plan indicates a particular type of subfloor construction. Various concrete pier blocks must be poured to support your subfloor. Indicate size, spacing, and number of pier blocks. Indicate size of fireplace footing and its location.

7. There is a difference between concrete and cement. Explain the difference.

8. There are several companies in this area that supply carpenters with redi-mix concrete. Name these companies.

9. From your plan, determine the number of cubic yards of concrete needed to pour footings, foundation walls, pier blocks and fireplace footing.

10. Anchor bolts and reinforcing rods are inserted into the wet concrete. Discuss size and placement of anchor bolts and placement of reinforcing rods.

11. Discuss form stripping method.

12. Upon completion, submit for grading.

D. 1. Install footings, foundation walls, pier blocks and fireplace footing on your platform. Construction must be precise and according to plan.

2. Upon completion, request evaluation by teacher.

E. 1. Upon completion of above Student Responsibilities, request Formal Summary. Complete and submit for grading.

FRANKLIN PIERCE HIGH SCHOOL

Unit Six: Communications Terminology

Name: _____

_____ CRAWL HOLE

_____ FOUNDATION

_____ BACKFILL

_____ CONCRETE

_____ FOOTING

_____ HOLLOW MASONRY

_____ STRIPPING

_____ ANCHOR BOLTS

_____ FOUNDATION FORMS

_____ BLOCKOUTS

_____ CEMENT

_____ REINFORCING ROD

_____ PIER BLOCK

_____ BRICK VENEER

1. THE SPREADING COURSE OR COURSES OF CONCRETE AT THE BASE OF FOUNDATION WALLS.
2. TWO SHEATHING OR PLYWOOD WALLS NAILED AND WIRED TOGETHER AND INTO WHICH CONCRETE IS POURED.
3. A DRY, POUDERY PRODUCT PRODUCED FROM LIMESTONE, SHALE, CLAY, AND MARL.
4. A MIXTURE OF CEMENT, SAND, GRAVEL AND WATER.
5. A BRICK WALL ATTACHED TO AN EXTERIOR WOOD WALL.
6. A BUILT-IN SPACE IN A FOUNDATION WALL THAT ALLOWS FOR ENTRANCE UNDER THE STRUCTURE.
7. A STEEL ROD THAT IS PLACED IN THE FOUNDATION TO SUPPORT PATIO'S AND PORCHES.
8. REMOVING THE FOUNDATION FORMS AFTER THE CONCRETE HAS SET.
9. BUILT IN SPACES IN FOUNDATIONS SUCH AS AIR VENTS AND CRAWL HOLES.
10. A 20" ROUND CONCRETE PAD USED TO SUPPORT SUBFLOOR POSTS.
11. STEEL BOLTS THAT ARE SECURED IN THE TOP OF THE FOUNDATION WALLS.
12. THE REPLACING OF SOIL AROUND THE FOUNDATION AFTER THE FORMS HAVE BEEN STRIPPED.
13. CEMENT BLOCK CONSTRUCTION OF FOUNDATIONS.
14. THE CONCRETE SUPPORTING PORTION OF A STRUCTURE BELOW THE FIRST-FLOOR CONSTRUCTION.

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Unit Six: Math Review NAME: _____

Show your work on this paper.

1. Add 6'7", 12'8", 10'4", 14'9" _____

2. Add 20'11", 16'8½", 45'6 3/4", 43'7 5/8" _____

3. Multiply 22'7½" by 4 _____

4. Change 12'8" to feet _____

5. Change 6'3" to feet _____

6. (24" + 1 5/8") - (10" + 7½") _____

7. Multiply 12 x 6 x 8 _____

8. Multiply 3/4 x 4½ x 2 2/3 _____

9. Change 54' to yards _____

10. Change 18" to yards _____

11. Change 6" to yards _____

12. Change 65' to yards _____

13. Find the volume of a rectangular solid 8' x 12' x 3'.

14. Find the number of cubic yards in a rectangular solid 67' x 18" x 6".

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Footings and Foundations: Formal Survey NAME: _____

Directions: Listed below are pertinent terms and phrases dealt with in this unit. Discuss how each is important in the correct construction of footings and foundations.

1. F.H.A. and city-county codes:

2. Various footing and foundation sizes:

3. Stockouts required:

[illegible]

4. [illegible]

5. Anchor bolts and reinforcing rods:

6. Determine number of cubic yards of concrete needed for a standard footing and foundation that is 150' long:

[illegible] Field Experiences
[illegible]

[illegible]: Floor Framing

[illegible]: Upon conclusion of this unit each student will have knowledge of various subfloor construction methods used in this area.

[illegible]:

1. Textbook (Unit 7)
2. Fiberglass resource material
3. Resource Center
4. Activity packet/written through independent study

[illegible]:

A. 1. Read textbook unit

2. Study plans and I.R.C./city-county codes

3. Use all necessary resource materials to obtain desired information.

B. 1. Complete Unit 7 Self Review. Submit for grading.

2. Complete Unit 7 Communication Terminology. Submit for grading. Be prepared for testing before formal lessons.

C. On a written report, discuss the following:

1. I.R.C. and city-county codes pertaining to materials used and methods of fastening and refer to foundation walls.

2. Three different subfloor construction methods used in this area:

a. Joist floors

b. Beam and decking

c. Beam and I.R.C.

Because of the lack of textbook material on these subfloor methods, you will receive the information via teacher lecture. Upon completion of the lecture, written knowledge will be required of you prior to finishing this unit.

[illegible]

a. [illegible]

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

5. [illegible]

b. [illegible]

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

5. [illegible]

6. [illegible]

c. [illegible]

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

5. [illegible]

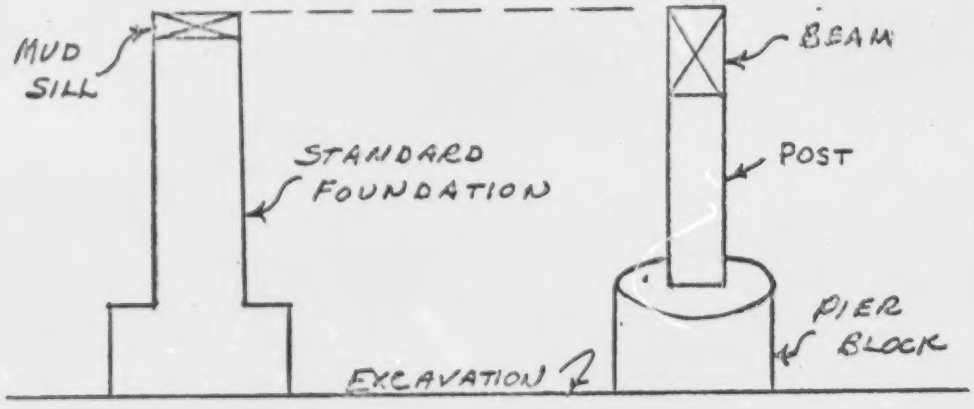
2. [illegible]

[illegible]

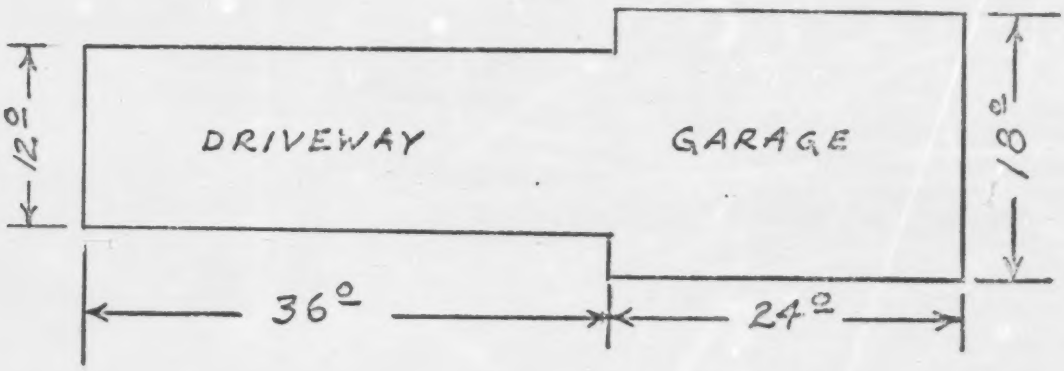
[illegible]

[illegible]

5. Discuss method of finding length of posts for subfloor construction:



6. A 4" concrete slab is to be poured for the garage and driveway shown in the drawing. Write up an order list of materials needed for the forms and determine how much concrete to order.



Formal Summary continued

7. Using the foundation plan furnished by the instructor and the dimensions given, find each of the following:

   a. Lineal feet of 2" x 6" for footing forms:_____

   b. Number cubic yards concrete needed for standard 24" foundation (footing and wall):_____

   c. Number of pier blocks needed for beam and decking floor:_____

   d. Cubic yards of concrete for pier blocks:_____

   e. Number of posts needed for beam and deck floor:_____

   f. Lineal feet of posts needed:_____

   g. Lineal feet of beams:_____

      Board feet of beams:_____

   h. Lineal feet of mud sill:_____

   i. How many square feet of plywood are needed for subfloor?_____

   j. Cubic yards of concrete for garage floor:_____

UNIT 8: DECIMAL FRACTIONS

OBJECTIVES: Upon completion of this unit the student will have demonstrated the ability to:

A. Read and write decimal fractions to hundred-thousandths

B. Determine which of two decimal numbers is larger or smaller

C. Change from decimal fractions to common fractions

D. Change from common fractions to decimal fractions

E. Add, subtract, multiply and divide decimal fractions

F. Apply the above objectives to "word problems"

METHOD: The student will be given a teacher-made pre-test covering the stated objectives. If he passes the pre-test with a score of 95% or better, he will move into the next unit. If he fails to achieve 95% on the pre-test, the teacher will prescribe a list of assignments to meet his particular weaknesses. When the student has completed and checked the assignments in his prescription, he will take a teacher-made post-test covering the unit objectives. He must score 80% or better in order to continue to the next unit. If he fails to achieve at this level, a new prescription will be written and upon completion a second post-test will be given. If he again falls below 80%, a third prescription is given and upon completion a third post-test for which 70% accuracy is required.

RESOURCES: 1. Vocational and Technical Mathematics in Action - Samuel Levine; Heyden Book Company, 1969.

T. I. P.

MATHEMATICS

UNIT 6: Decimal fractions NAME: _____

PRE-TEST

1. Write 15 thousandths as a decimal. _____

2. Which of the following is the way you would read .06?

   a) six-tenths b) six c) six-thousandths d) six-hundredths

3. Rearrange the numbers in the next two problems so that the largest number is first and the smallest is last.

   a) .7 .007 .08 b) .043 .23 .3

4. Change .9 to a common fraction. _____

5. Change 1/8 to a decimal. Leave the remainder as a common fraction after second decimal place.

   _____

6. .7 • .8 • .9 = _____ 7. $5.76 • $25.00 • $.49 = _____

8. $73.80 - $7.17 = _____

9. Take $8.11 from $10.00. The remainder is _____.

10. $5.47 x 10 = _____ 11. .35 • 10 = _____

Place the decimal point correctly in the answers to the following problems. Add any zeros that may be needed.

12. .06 x .9 = 54 13. $3.75 x .6 = $2 2 5 0

14. $25\overline{)9.25}$ = 37

15. $25\overline{).925}$ = 37

16. $.25\overline{).925}$ = 37

17. $2.5\overline{)9.25}$ = 37

18. A piston has a diameter of 3.0625 ± 0.0015". Find the largest and smallest diameters that are acceptable. What is the total tolerance?

19. Round off the following numbers:

a) 26.435 to the nearest whole number. _____

b) 93.0219 to the nearest thousandth. _____

c) 145.2615 to the nearest hundredth. _____

d) 4.5627 to the nearest tenth. _____

e) 8.0000258 to the nearest ten-thousandth. _____

20. 27.93 x 0.07 = _____

21. 61.572 ÷ 1.2 = _____

22. A carpenter charges $6.75 per hour for repairing a wood floor. He starts work at 8:20 a.m. and completes the job at 1:50 p.m. He also charges the cost of the materials, which amounts to $15.65. What is the total cost of the job?

23. In order to put the finishing touches on the construction of a moon probe in time for a scheduled launching, a special machinist worked five 5-hour days at regular wages of $5.50 per hour. He then worked 3 hours on Saturday at time and one-half. In order to complete the rush job, he also worked 6 hours on Sunday at double time pay. What are his total wages for the week? If his total tax deduction was $43.42, what was his take home pay for the week?

Unit 9 - Pre-Test continued

24. A contractor paid $1,806.42 for framing material and trim, $65.50 for hardware, $847. for masonry, $170.35 for painting, and the cost of his own labor was $910.47. What was the total cost of the items listed?

25. The estimate for interior finish was as follows: Doors, $562.79; windows, $87.77; casement sash, $78.30; interior trim, $84.75; shelves, $27.60; drawer stock, $15.52. When the job was completed, the contractor received a credit of $14.27 on the doors, $3.25 on the sash, $6.29 on the trim. He ordered more shelving that cost him $4.26 and a light of glass to replace a broken one at a cost of $3.75. What was the net amount of the bill?

137

[illegible]

[illegible]

UNIT 5: Decimal Fractions NAME: _____

Assignments

Topic: Decimal and Fractional Relationships to Action

Content

Place Value	1.	Read pages 85-86 Do problems 1, 2, 5, page 86
Add, Subtract, Compare	2.	Read pages 87-89 Do problems 1-15, 16, 17, 19, 23, pages 89-90
Tolerance	3.	Read pages 91-92 Do problems 1-6, page 92
Rounding Off	4.	Read pages 93-95 Do problems 2, 4, 5, page 96
Multiplication	5.	Read page 97 Do problems 1-5, page 97
Division	6.	Read pages 98-99 Do problems 1-6, 11, page 99
Multiplying, Dividing by Powers of 10	7.	Read pages 91-100 Do problems 1-12, page 91 Do problems 1-20, page 93
Decimals to Fractions	8.	Read pages 111-99 Do problems 9-13, page 99
Fractions to Decimals	9.	Read pages 99-101 Do problems 1-6, 8, page 99
Decimal-Fraction Table	10.	Read pages 99-99 Do exercises 1-7, 11, page 99
Time-Keeper	11.	Read pages 99-99 Do problems 1-5, page 97
Review	12.	Problems 1-6, 7-11, pages 97-99
	13.	Test

[illegible]

[illegible]

[illegible]

[illegible] Date: [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]													
[illegible]													

[illegible]

[illegible]

[illegible]

[illegible]

Name _____

[illegible]

1. Write 9 and 91 thousandths as a decimal number. _____

   Write six hundredths as a decimal number. _____

2. Rearrange the numbers in the word bar problem so that the largest number is first and the smallest is last.

   .25 .30 .205 1.25 b) .205 .3 .25

3. Change .125 to a common fraction number in lowest terms. _____

4. Change 3/4 to a decimal. Leave the remainder as a common fraction after the second decimal place. _____

5. 1.2 + .45 + 6.3 = _____ 6. 30.86 + 215.32 + 30.05 + 1.45 = _____

7. $40.25 - $15.45 = _____

8. Take $2.75 from $15.25. The remainder is _____

9. $65.72 x 100 = _____ 10. 4.22 x 10 = _____

Place the decimal point correctly in the answer to the following problems. Add any zeros that may be needed.

11. 30.25 x .25 = 7625 12. 4.32 x .2 = 864

13. [illegible] 14. [illegible]

$50

[illegible]

[redacted]

[redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

[redacted]

Question 2 (continued)

(b) [redacted]

(c) [redacted]

[redacted]

[redacted]

8. Wall intersections require a specific type construction. Discuss.

9. Briefly discuss how you would construct one exterior wall. Begin with laying of plate to raising of wall.

10. Explain use of double plate.

11. Explain nailing procedures used to fasten all wall framing members. Include nail sizes.

12. Determine number of board feet of material needed to frame all walls of your construction model. Also figure cost of these various construction materials (plates, studs, headers, cripples, trimmers, rough sills, and top plates).

13. Upon completion, submit for grading.

D. 1. Lay plates and frame exterior, bearing, and partition walls on your model platform. Accuracy must be maintained in order to complete task correctly.

2. Upon completion, request evaluation by teacher.

E. 1. Upon completion of above Student Responsibilities, request Formal Summary. Complete and submit for grading.

SUPPLEMENTARY A

HOW TO DETERMINE HEADER LENGTHS

In the Tacoma area, headers for door and window openings are usually 4" x 8" Douglas fir.

Header lengths are determined by the doors or windows that are to be installed in the rough opening. . In this area, most doors and windows are standardized. By applying the following information correctly, you should be able to compute header lengths for any given door or window.

Swinging Doors: Bedroom

Door	=	2'-6"
2 Trimmers	=	3½"
Jambs	=	1½"
Clearance	=	1"
Total		2'-11 3/4" or 35 3/4" or 5 3/4" larger than door size

Window and Sliding Glass Doors:

Window	=	6'-0"
2 Trimmers	=	3¼"
Total		6'-3¼" or 75¼" or 3¼" larger than window size

Overhead Garage Doors:

Door	=	16'-0"
4 Trimmers	=	6½"
Jambs	=	3¼" (2x6 material)
Clearance	=	1"
Total		16'-10 3/4" or 10 3/4" larger than door size

Sliding Wardrobe Doors:

2 Doors	=	4'-0"
2 Trimmers	=	3¼"
Total		4'-3¼" or 51¼" or 3¼" larger than door size

Bi-Fold Doors:

2 Sets of Doors	=	4'-0"
2 Trimmers	=	3¼"
Jambs	=	1½"
Clearance	=	1"
Total		4'-5 3/4" or 53 3/4" or 5 3/4" larger than size of doors

Pocket Doors:

Door Size x 2	=	5'-0"
2 Trimmers	=	3¼"
Jambs	=	1½"
Clearance	=	1"
Total		5'-5 3/4" or 65 3/4" or 5 3/4" larger than two times door size

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Unit Eight: Communications Terminology

____ non-bearing partition
____ rough sill
____ plumb
____ cripple
____ backing
____ top plate
____ header
____ sheetrock
____ on-center
____ soffit
____ wall sheathing
____ rough opening
____ bearing partition
____ double top plate
____ lay-out
____ brace
____ sole plate
____ trimmer
____ full stud

1. A horizontal member located at the base of a partition or other frame.
2. A gypsum product that is made in large rigid sheets and is fastened to the frame of a building to provide surface finish.
3. The opening formed by the framing members.
4. Horizontal framing member that supports the load over an opening.
5. Horizontal framing member attached to the top plate which gives a nailing surface for gypsum wallboard.
6. Exactly perpendicular or vertical; at right angles to the horizon or floor.
7. A horizontal member placed on top of the studs to support the roof load.
8. To stiffen or make steady in a horizontal or vertical position.
9. A vertical member that reaches from sole plate to top plate.
10. A structural covering of boards or prefabricated panels that are attached to the exterior studding of a structure.
11. The underside of the members of a building, such as overhangs.
12. A horizontal member whose primary purpose is to tie all exterior and interior walls together.
13. A partition that supports the ceiling or roof.
14. A vertical framing member that is terminated at the rough sill.
15. A vertical framing member that is terminated at the header of a rough opening.

16. The lowest horizontal member of a window rough opening.

17. A partition that simply encloses space and provides a framework for wall-covering materials.

18. A method of indicating the spacing of framing members.

19. Marking of plates to indicate placement of studs, headers, cripples, corners and intersections.

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Unit Eight: Math Review - Fractions NAME: _____

Show your work on this paper.

1. Add 1/2, 1/16, 3/4, 5/8 _____

2. Subtract 9/16 from 3/4 _____

3. Change 3/8" to sixteenths _____

4. Change 12/16 to fourths _____

5. Change 3/4' to inches _____

6. Add 3/4" and 3/4" _____

7. Change 10" to a fractional foot _____

8. Add 1 1/2", 5/4", 9/8", 1 5/8" _____

9. Add 1 5/8" and 1 5/8" _____

10. Subtract 5/4" from 2 5/16" _____

11. Change 7½' to feet and inches _____

12. Add 3½", 4 5/16", 2 1/8", 3 3/4" _____

Math review continued

12. Subtract 9 25/32" from 10 3/8" _____

14. Add 1 1/8, 1 1/4, 1 1/8 _____

15. Change 3 1/2' to inches _____

16. Change 25" to feet _____

17. Change 3 1/4 doz. to number of pieces _____

18. Add 2' 2½", 5' 6 3/4", 8' 9 5/16" _____

19. Subtract 5' 3 1/8" from 10' 2 9/16" _____

20. Multiply 1 1/4" by 2 _____

21. Multiply 5' 2 3/8" by 26 _____

22. Divide 18' 6½" by 4 _____

23. Divide 3½" by 2 _____

24. Add 1 1/8" and 1 1/8" _____

25. Subtract 7½" from 88 1/8" _____

[illegible]

[illegible]

Lay Plans and Team Building: Forest Games

Name: _____

Directions: Listed below are pertinent terms and phrases which are key parts. Please take care to themselves to the correct and accurate construction of all essential and essential parts.

1. F.A.A. [illegible]

2. Parts of the unit these (define each part).

[illegible]

[illegible]

[illegible]

Name: _____ Period: _____

5. Use the given information:

a. Find the missing length of _____

b. Find the number of square feet in the figure: _____

c. Find the exact number of cubic meters in a cylinder with diameter _____

d. Find the height of each of the three boxes in the picture:

Red: _____ Green: _____ Orange Box: _____

e. Find the cost of the plastic per cubic inch if it costs _____ per inch for _____

[illegible]

[illegible]

[illegible]: [illegible] [illegible] [illegible]

T. I. P.

MATHEMATICS

UNIT 9: Percent NAME: _____

Assignments

Texts: (1) Vocational and Technical Mathematics in Action
(2) Practical Problems in Mathematics - Carpentry Trades
(3) Holt General Mathematics

Concepts

Meaning and Changing	1.	(1) Read pages 69-71 Do problems 1-6, 9-12, 14; page 71
Meaning and Changing	2.	(3) Read page 178 Do problems 1-10
Using	3.	(1) Read page 73 Do problems 1, 2, 3, 6, 7, 8; pages 73-74
Percent to Decimal	4.	(3) Page 185 Do problems 1-3, 5, 9-12, 15-19; page 185
Decimal to Percent	5.	(3) Page 185 Do problems 1-10, 19-24; page 185
Fraction to Percent	6.	(3) Page 186 Do problems 1, 2, 4, 6, 9, 12, 15; page 186
Percent to Fraction	7.	(3) Page 187 Do problems 1-6, 10-14; page 187
Using	8.	(1) Study pages 78-81 Do problems 1, 2, 3, 8, 12; page 81
Using	9.	(1) Study summary page 82 Do problems 1, 2, 6, 7, 8; page 82
Using	10.	(2) Page 46-49 Do problems 2, 6, 13, 20, 28, 30, 41
Using	11.	(2) Pages 50-51 Do problems 1, 2, 5, 10, 14
Using	12.	(2) Page 52 Do problems 2, 3, 6, 14, 16, 31, 36, 37, 38
	13.	Test

Unit 9: Percent

NAME: _____

Assignment	1	2	3	4	5	6	7	8	9	10	11	12	Test
Number of Problems													
Number Correct													
Date Finished													

T. I. P.

MATHEMATICS

UNIT 9: Percent NAME: _____

POST-TEST 1

1. Write the equivalent of each given term.

	FRACTION	DECIMAL	PERCENT
a.	_____	.15	_____
b.	_____	_____	31%
c.	3/4	_____	_____
d.	_____	1.25	_____
e.	_____	_____	7½%
f.	5/8	_____	_____

2. 12% of $742 = _____

3. $16 is _____% of $80.

4. _____% of 380 is 19

5. 68 is 50% of _____

6. 96 is _____% of 24

7. A jet transport flies about 550 mph. A propeller driven transport flies about 60% of that speed. What is the speed of the propeller driven plane?

8. After making a down payment on a car, Joe has a $700 balance to pay. When he finished making payments on the car, he had paid $805 more than the down payment. What was the amount of interest he paid and what percent interest did he pay?

9. Dick's father bought a new car for $3,060. He paid 20% down. If the balance is paid in 24 months and his finance charges are 8% per year, how much interest does he pay? What are his monthly payments?

10. How many square feet of sheathing are to be ordered if the area of the roof is 2,550 sq. ft. and 20% is allowed for waste?

11. A contractor figures a job to cost $15,000. If he allows 12% for profit, what should be bid for the job?

12. A hardware company adds 3½% to bills that are not paid within a 30 day period. If a carpenter is unable to pay his bill of $70.80 until after the 30 days, what was the total charge of the bill?

13. The dealer's price to a contractor on a bill of materials is 12½% off list price, with an additional 2% discount for cash within 30 days. Find the total discount and net price on a $1,975 order.

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.
MATHEMATICS

Unit Nine: Percent
POST-TEST 2

1. Write the equivalent of each given term:

	FRACTION	DECIMAL	PERCENT
a)	1/4	_____	_____
b)	_____	.35	_____
c)	_____	_____	64%
d)	1/8	_____	_____

2. 15% of $148.00 = _____

3. $31 is _____% of $124.00

4. _____% of 450 is 18.

5. 37 1/2% of $164.00 = _____

6. A meat inspector tested a 4 ounce sample of hamburger and found it to contain 1.3 ounces of fat. What was the percentage of fat in the meat?

7. How much is saved by buying a $30 tire at a reduction of 30%? What is the sale price of the tire?

8. A carpenter finds that storm windows list for $12.95 each. How much will it cost him for 12 windows if he gets a 5% discount for being a contractor? By paying cash he gets an additional discount of 2%. What would be his price if he pays cash for 12 windows?

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T. I. P.

UNIT SITE: Leveling, Plowing & Installing Exterior Sheathing

OBJECTIVE: Upon completion of this unit, each student will have knowledge of and experience in leveling, aligning, and applying exterior sheathing to a building.

RESOURCE MATERIALS:

1. Textbook (Unit 8)
2. Classroom resource materials
3. Resource Center
4. On-site construction through independent study

STUDENT RESPONSIBILITY:

A. 1. Read unit in textbook.

2. Study F.H.A. and city/county codes pertaining to this unit.

B. Complete Unit 9 Communication Terminology. Submit for grading. Be prepared for testing before Formal Summary.

C. In a written report, discuss the following:

1. Prior to installing exterior sheathing to a framed building, an operation must be performed. Discuss it.

2. F.H.A. and city/county codes pertaining to wall sheathing.

3. Determine number of sheets and total cost of exterior sheathing material required for your plan.

4. Upon completion, submit for grading.

D. 1. Level and align building. Install exterior sheathing.

2. Upon completion, request evaluation by teacher.

E. 1. Upon completion of above Student Responsibilities, request Formal Summary. Complete and submit for grading.

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T. I. P.

Unit Three - Construction Terminology

NAME _____

_____ fiberboard

_____ plywood

_____ level

_____ straightedge

_____ pneumatic nailer

_____ gypsum sheathing

_____ shiplap

_____ align

1. A straight strip of wood or metal used to lay out or check the accuracy of work.

2. A gypsum product fastened to the exterior frame of a building.

3. A product made from wood fibers with added weather-proofing ingredients.

4. A wood product made by gluing together various layers at right angles to each other. Used extensively in this area for sheathing.

5. The process of bringing the framed structure to a perfect vertical position.

6. The process of making each exterior wall of the framed structure perfectly straight from corner to corner.

7. An air powered machine used to secure sheathing that is generally applied at a 45° angle to the framed structure.

8. A solid wood board used for exterior sheathing that is generally applied at a 45° angle to the framed structure.

[illegible] HIGH SCHOOL
U. S. A.

Level, Flat and Tricot building. Camouf Sateen WAC

Directions: Unfold hollow any particular tones and process. Built width to this work. Fingers box each is important in the correct construction of your building.

1. Level and strips building

2. F.A.A. and city/county codes:

2. Determine the amount and type of material needed for the collapsible shoulder rig at Unit garage. (each bracket = 4ft)

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.

UNIT ELEVEN: Pafter and Roof Framing

OBJECTIVE: Upon completion of this unit, each student will have knowledge of and experience in installation of roof framing members.

RESOURCE MATERIALS:

1. Textbook (Unit 9)
2. Classroom resource materials
3. Resource Center
4. On-site construction through independent study

STUDENT RESPONSIBILITY:

A. 1. Read and study textbook, plans and F.H.A., city/county codes.

2. Utilize all available resource materials for roof framing information.

3. In order to lay out rafters to the 1"=1'-0" scale of your models, it is necessary to make a scaled framing square. Do this on a piece of cardboard. Accuracy is vital.

B. 1. Complete Unit Eleven, Math Review. Submit for grading.

2. Complete Unit Eleven, Communication Terminology. Submit for grading. Be prepared for testing before Formal Summary.

C. In a written report, discuss the following:

1. F.H.A. codes pertaining to rafter spacing.

2. From your plan, determine roof type and pitch. Draw aerial sketch of rafter placement.

3. F.H.A. and city/county codes pertaining to rafter material size in relation to span.

4. Learn and demonstrate necessary terminology in order to understand roof framing.

5. Become thoroughly familiar with the rafter framing square.

6. Describe method of laying out and cutting the following:

a. common rafter

b. hip rafter

c. valley rafter

d. hip jack rafter

7. Determine number, length and cost of roof framing materials for your particular model.

8. Describe gable end construction.

9. Upon completion, submit for grading.

D. 1. Install roof framing members on your model. Maintain accuracy for quality construction.

2. Upon completion, request evaluation by teacher.

E. 1. Upon completion of above Student Responsibilities, request Formal Summary. Complete and submit for grading.

FRANKLIN PIERCE HIGH SCHOOL
T. I. P.

Unit Eleven: Construction Terminology NAME: _____

_____ seat cut

_____ total rise

_____ ridge

_____ hip rafter

_____ shingles

_____ kicker

_____ cornice

_____ collar beams

_____ cripple-jack rafter

_____ valley rafter

_____ rafter spacing

_____ gable roof

_____ common rafter

_____ hip roof

_____ hip-jack rafter

_____ tail cut

_____ total run

_____ mansard roof

_____ jack rafter

_____ pitch

_____ valley-jack rafter

_____ gambrel roof

_____ dormers

_____ facia

1. A variation of the gable roof where each slope is broken, usually near the center.
2. A rafter that runs at right angles from the wall plate to the ridge.
3. The incline of the roof as a ratio of the vertical rise to the span.
4. A wood member used for the outer face of a box cornice where it is nailed to the ends of the rafters and lookouts.
5. A projecting structure built out from a sloping roof. Usually includes one or more windows.
6. A roof which is flat or which is pitched only enough to provide for drainage.
7. The on-center distance at which rafters are secured to the structure.
8. A rafter that is the same as the upper end of a common rafter but intersects a valley rafter instead of the plate.
9. A roof that has two identical surfaces that slope from the center line of the structure.
10. The upper most structural member of a roof. Usually found in the center and is used to fasten rafters to.
11. The total distance between structural supports, such as walls, that rafters have to cover.
12. A rafter that is the same as the lower part of a common rafter but intersects a hip rafter instead of the ridge.
13. A roof that is similar to the hip roof except that each of the four sides has a double slope.

Unit Eleven: Comprehension Exercises

_____ tail rafter

_____ purlin

_____ pre-built truss

_____ flat roof

_____ rafter cut

14. A roof covering. Can be made of asphalt or wood.

15. Horizontal roof members used to support rafters between the plate and ridge board.

16. The horizontal distance each common rafter travels. Usually one-half the span.

17. A short rafter that reaches from the plate to the fascia.

18. Exterior overhang of a roof. Usually consists of boards, panels and moldings.

19. A pre-built structural unit used to form the roof and ceiling surfaces. They rest on the exterior walls and span the entire width of the structure.

20. The total distance that the rafters protrude above the plate line of a structure.

21. A roof that rises from all four sides of a building.

22. A structural member that rests on the plates and runs to the purlin. Used for additional roof support.

23. Structural member that are ties between rafters on opposite sides of the roof.

24. A rafter that extends diagonally from the plate to the ridge in the hollow formed by the intersection of two roof sections.

25. That cut on the part of the rafter that extends beyond the building line.

26. A rafter that intersects neither the plate or the ridge and is terminated at each end by hip or valley rafters.

27. The cut on a rafter which allows the rafter to rest firmly on the plates.

28. A rafter that runs from the plate to the ridge at a 45° angle to the corner of the building.

29. Any rafter that does not extend from a plate to the ridge.

[illegible]

[illegible]

1. Divide 45' by 28" _____

2. Multiply 11.45 x 3 _____

3. Multiply 11.69 x 12 _____

4. Change 11.65' to 11 $\frac{}{8}$"

5. Change .41 to sixteenths _____

6. Change 17.75' to 17 $\frac{}{8}$"

7. Multiply 11.45' by 14. Put answer in feet and inches correct to nearest eighth of an inch. _____

8. Divide 852" x 56" _____

9. Divide 57' by 4.3' _____

10. Multiply 17.41' by 13.__ Put answer in feet and inches correct to nearest eighth of an inch. _____

Name: _____ Period: _____ Date: _____

3. Why and why? Explain!

4. Why surface tension?

5. Describe what this applet is all about. Include at least 3 facts in the drawing square below.

6. Observe the following arrangements as they relate to what you did in your lab!

a) H_2O + H_2_____?

b) H_2O + H_2_____?

c) H_2O + H_2_____?

d) H_2O + H_2_____?

[illegible]

(a) [illegible]

(b) [illegible]

(c) [illegible]

[redacted]

4. There are several methods used in the construction of footing and foundation forms. Two of the most common methods used in this area are on display in the classroom. Select one of these form types and discuss construction methods used in setting up, squaring, leveling, and pouring concrete.

5. Various blockouts are required prior to concrete pouring. Discuss.

6. Explain the difference between concrete and cement.

7. From your plan, determine the number of cubic yards of concrete necessary to pour the following:

   a. Footings and foundations

   b. Pier blocks

   c. Fireplace footing

8. Determine from your plan the type of subfloor construction used. Discuss the following construction details:

   a. Mudsill type and how anchored

   b. Beam size and spacing

   c. Post size and spacing

   d. Subfloor material and method of application

9. Discuss method used when framing openings in subfloors.

10. Discuss F.H.A. regulations pertaining to the following wall framing details:

    a. Studs

    b. Corner construction

    c. Framing openings

    d. Nailing procedures

11. Define and indicate material size of the following wall framing members:

    a. Stud

    b. Header

    c. Top plate

    d. Cripple

    e. Trimmer

    f. Sole plate

    g. Rough sill

12. Determine header length for the following door and window openings:

    a. 2' 6" x 6' 8" door

    b. 10' 0" x 5' 0" window

    c. 2 2' 6" x 6'8" bi-fold doors

    d. 16' 0" x 7' 0" garage door

13. Discuss framing procedures used on one wall of your model. Begin with laying of plate to raising of wall.

14. Define the following:

    a. Balloon framing

    b. Platform framing

    c. Exterior wall

    d. Bearing wall

    e. Partition

    f. Double top plate

15. Discuss F.H.A. and city/county codes pertaining to exterior wall sheathing.

16. From your plan, determine the amount and cost of sheathing for the exterior of your model.

17. Discuss F.H.A. and city/county codes pertaining to ceiling joist framing.

18. Discuss the following:

    a. Ceiling joist spacing

    b. Joist size in relation to span

    c. Purpose and types of headers used in conjunction with ceiling joists

19. Discuss why backing is necessary.

20. Discuss material size and placement of backing.

21. Define the following roof types:

    a. gable

    b. shed

    c. hip

    d. flat

    e. [illegible]

    f. gambrel

22. Define the following roof framing members:

    a. common rafter

    b. hip rafter

    c. valley rafter

    d. hip jack rafter

    e. valley jack rafter

    f. cripple rafter

    g. ridge board

    h. purlin

    i. kicker

    j. collar tie

    k. pre-built truss

23. Thoroughly discuss the process used to lay out a common rafter using the framing square.

24. Determine the length of the first hip jack rafter for a building with a span of 24'-0". (Use mathematical method)

25. Upon completion, submit for grading.

[illegible]

UNIT TOPIC: Roof Sheathing, Cornice Construction, and Soffit Ventilation

RATIONALE: Upon completion of this unit each student will have knowledge of and experience in applying roof sheathing, gutters and soffit vents.

RESOURCE MATERIALS:

1. Textbook (Units V, VI and VII)
2. Classroom resource materials
3. Resource Center
4. On-site construction through independent study

STUDENT RESPONSIBILITY:

A. 1. Study text and F.H.A. codes pertaining to roof sheathing and cornice construction.

2. Utilize all available resource materials.

B. 1. Complete Unit VI Math Review. Submit for grading.

2. Complete Unit VI Communications Terminology. Submit for grading; to be prepared for testing before formal summary.

C. In a written report, discuss the following:

1. F.H.A. codes pertaining to roof sheathing.

2. Determine number of sheets and total cost of roof sheathing material needed for your model.

3. F.H.A. codes pertaining to soffit or cornice construction, and gutters and downspouts.

4. From your plan, determine soffit or cornice type. Discuss construction methods to be employed (Unit VII).

5. Define: soffit panel, cornice, lookout, fascia board, soffit vent, frieze, rafter, gutter, and downspout.

6. From your plan determine the type of gutters and downspouts used.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

d. Flashing at a wall

e. Nailing and fastening

f. Method of laying

g. Chimney flashing

h. Vent stack flashing

i. Hip and ridge finish

3. Built-up roofing

4. In order to properly apply wood shingles, the following factors must be kept in mind. Discuss each.

a. Type material and how made

b. Roof sheathing

c. Underlayment

d. Flashing

e. Nail types

f. Method of applying wood shingles

g. Hip and ridge finish

5. Hand-split shakes require the following laying procedures. Discuss each.

a. Shake types

b. Method of applying

c. Nailing procedures

d. Valley construction

e. Ridge and hip finish

6. From your plan, determine shingle type. Mathematically compute number of squares of shingles required to cover roof surface. Determine total cost of building paper, shingles and nails.

7. Upon completion, submit for grading.

D. 1. Apply roofing materials to your model. Care must be taken in order to maintain quality construction.

2. Upon completion, request evaluation by teacher.

E. Upon completion of above student responsibilities, request formal summary. Complete and submit for grading.

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T. I. P.

Unit Thirteen: Communications Terminology NAME:_____

_____ mineral fiber shingles

_____ square of shingles

_____ plain barbed nail

_____ pneumatic powered stapler

_____ 3 tab square butt strip shingle

_____ mineral surfaced roll

_____ wood shakes

_____ drip edge

_____ spiral thread nail

_____ coverage

_____ smooth roll

_____ exposure

_____ annular thread nail

_____ shingle butt

_____ valley flashing

_____ saturated felt

_____ underlayment

1. Amount of shingle material that will cover 100 sq. ft.

2. The amount of weather protection provided by the overlapping of shingles.

3. The shortest distance in inches between the edges of adjacent courses of shingles.

4. The lower exposed edge of a shingle.

5. Felt impregnated with asphalt or coal-tar; used for sheathing undershingles.

6. A roll of felt saturated with asphalt and has a smooth surface.

7. A roll of felt saturated with asphalt and surfaced with mineral granules.

8. A square shingle 12" x 36" with two slots that make three sections.

9. Asphalt-saturated felt that covers the roof under the shingles.

10. A metal strip bent at right angles that is installed on the edge of roofs under the shingles.

11. A metal strip that is installed in the valley intersection of two roofs.

12. A roofing nail with grooves on a part of its surface.

13. A roofing nail with grooves covering all of its surface.

14. A roofing nail with a large spiral grooves cut into its surface.

15. A power-driven stapling machine used for roofing.

16. Usually hand split cedar shakes with high durability.

17. Shingles manufactured from asbestos fiber and Portland cement.

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T. I. P.

Unit Thirteen: Math Review

NAME: _____

Show your work on this paper.

1. $44.69 + $12.58 + $7.49 + $83.01 = _____

2. 12.006 - 9.7542 = _____

3. 408 x 3.14 = _____

4. 2.8738 ÷ 2.7 = _____

5. 8 1/16 + 7 1/2 + 15 + 9 1/4 = _____

6. 49 1/16 - 25 1/2 = _____

7. 16 x 4 7/8" = _____

8. 4 1/5 ÷ 7/8 = _____

9. 30% of $545 = _____

10. 32 is what % of 128? _____

11. A man worked 47 3/4 hours during one week. If he earns $2.50 an hour for the first 40 hours and $3.75 an hour for overtime, how much did he earn that week?

12. The price of a new car is $3,460. If Mr. Green made a down payment of 15% of the price of the car, how much money did he pay down?

13. 5 2/3 yd. = _____ ft. = _____ in.

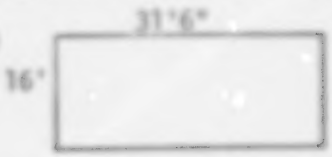
14. 88 5/8" = _____ ft. _____ in.

15. 7'3" • 3 = _____

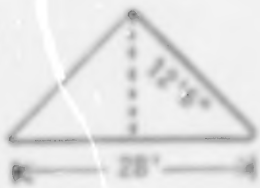
16. If a scale drawing has a scale of 1/8" = 1', what would be the lengths of the lines drawn to represent a rectangle 10' • 14'?

17. Find the areas of the following figures.

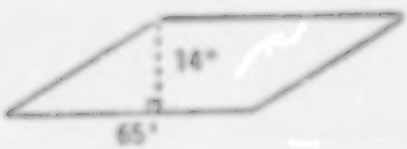
a)



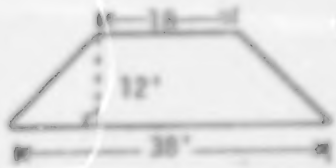
b)



c)



d)



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Applying Roofing Materials: Pretest Summary

DIRECTIONS: Listed below are pertinent terms and phrases dealt with in this unit. Discuss how each is important in the correct installation of roofing materials.

1. F.H.A. and city/county codes:

2. Roofing material types:

3. Your model requires a particular roofing material. Discuss the following factors pertaining to this roofing material:

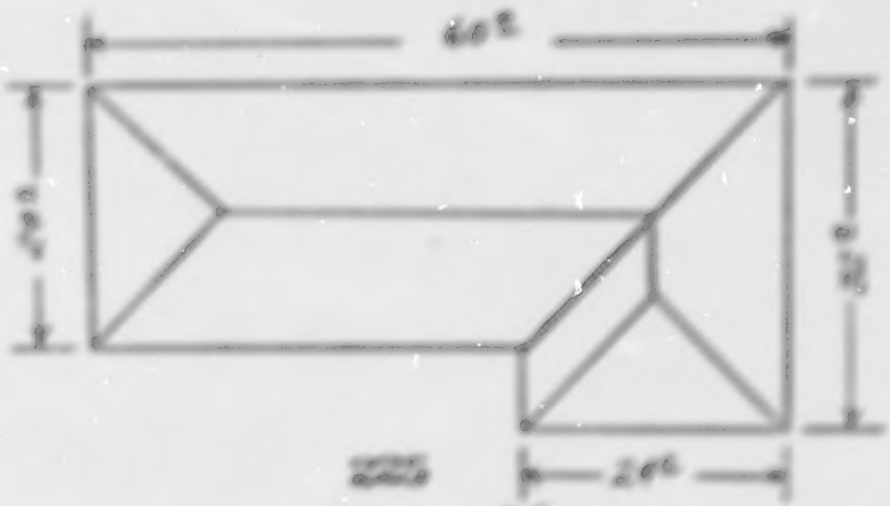
   a. Type:

Fanciful Secrecy continued

a. Roll types:

c. Process of application:

4. For the roof drawn below, determine the following:
(Figure length of common rafters as 12')



[illegible]

a. [illegible]

b. [illegible]

c. [illegible]

d. [illegible]

e. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

[illegible]

A. 1. [illegible]

2. [illegible]

B. 1. [illegible]

2. [illegible]

C. In a written report, discuss the following:

1. F.H.A. codes pertaining to exterior doorways-shutters, sliding glass doors, exterior doors and garage doors.

2. Shutter types:

a. [illegible]

b. [illegible]

3. Briefly discuss process of installing shutters.

4. Discuss installation of the following:

a. exterior door frame

b. sliding glass door

c. garage door

5. Draw your plan, indicating the number and size of all exterior shutters and doors. Include garage door.

[illegible]

1. [illegible] rules governing [illegible] types of [illegible] siding:

   a. [illegible]

   b. [illegible]

   c. [illegible]

   d. [illegible]

   e. [illegible]

2. The following siding types are used in this [illegible]. Discuss each type and how it is [illegible]:

   a. [illegible]

   b. [illegible]

   c. [illegible]

   d. [illegible]

   e. [illegible]

   f. [illegible]

   g. [illegible]

3. Determine from your [illegible] the type of siding used. Will there [illegible] of each type, what will [illegible] siding, and why?

4. [illegible] restrictions, submit for grading.

5. 1. Install [illegible] siding as per [illegible]. Take [illegible] to ensure quality [illegible].

   2. [illegible] restrictions, request [illegible] by teacher.

6. [illegible] restrictions of the above [illegible] [illegible], request formal [illegible]. Interview and submit for grading.

[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
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[illegible]

13. Find wall area of an 8' wall 65' long if there are two 6^{0}_{-} x 3^{0}_{-} windows, an 8^{0}_{-} x 5^{0} window, and a 3^{0} x 6^{8}_{-} door in this wall. Find answer correct to the nearest square foot.

14. How many feet of gutter are needed for a rectangular house 24^{0}_{-} x 55^{6}_{-} if it has a gable roof? A hip roof?

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Exterior Carpentry Finish: Formal Summary

DIRECTIONS: Listed below are pertinent terms and phrases dealt with in this unit. Discuss how each is important in the correct installation of exterior doors, windows, and siding.

1. Window installation process:

2. Swinging door installation process:

3. Discuss process used to install exterior siding to your model:

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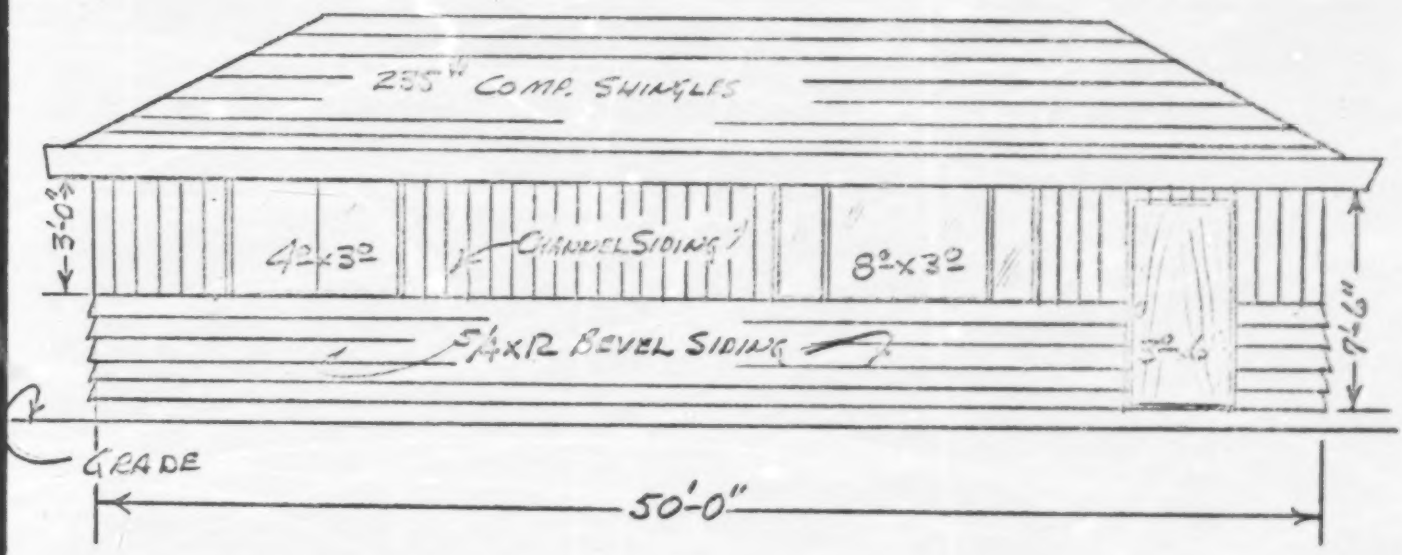
4. For the exterior wall shown, determine how much of each kind of siding is needed.



UNIT FIFTEEN: Interior Construction

This unit is separated into four major areas:

I. Thermal Insulation
II. Interior Wall and Ceiling Finish
III. Finish Flooring
IV. Doors and Interior Trim

OBJECTIVE: Upon completion of this unit, each student will have knowledge of all phases of interior construction finish.

I. THERMAL INSULATION

RESOURCE MATERIALS:

1. Textbook (Unit 13)
2. Classroom resource materials
3. Resource Center
4. On-site construction through independent study

STUDENT RESPONSIBILITY:

A. 1. Read unit in textbook.

2. Refer to all resource materials including F.H.A. and city/county codes.

B. 1. Complete Unit Fifteen (I) Math Review. Submit for grading.

2. Complete Unit Fifteen (I) Communications Terminology. Submit for grading. Be prepared for testing before Formal Summary.

C. In a written report, discuss the following:

1. The building sequence at this point.
2. Heat transmission:
   a. conduction
   b. convection
   c. radiation
3. Thermal insulation

4. Types of insulation and where used:
   a. flexible
   b. loose fill
   c. rigid
   d. reflective
5. Crawl space insulation
6. Condensation and vapor barriers
7. Purpose for ventilation devices and types used on your model
8. Installation procedures for batts and blanket insulation
9. Installation of fill insulation
10. Amount and cost of batt or blanket insulation required for exterior walls of your model
11. Upon completion, submit for grading.

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Unit Fifteen: Communications Terminology NAME: _____

I. Thermal Insulation

_____ crawl space insulation
_____ visqueen film
_____ heat transmission
_____ flanges
_____ thermal insulation
_____ wire cloth
_____ vapor barriers
_____ convection
_____ reflective insulation
_____ insulating boards
_____ conduction
_____ blown-in fill
_____ rigid insulation
_____ Batts and blanket insulation
_____ airway
_____ radiation
_____ prefabricated ventilators
_____ flexible insulation
_____ condensation
_____ loose fill insulation
_____ louvers

1. The passage of heat from one place to another.

2. Transmission of heat from one material to another.

3. The transfer of heat by air.

4. The transmission of heat by waves.

5. Insulation that restricts the flow of heat.

6. Insulation that is flexible and manufactured in blankets or batts.

7. Insulation that is granular and is poured or blown where insulation is required.

8. Insulation that is manufactured into boards.

9. An insulation that has metal foil on one facing surface that will reflect heat.

10. Insulation installed above a crawl hole usually composed of vapor barriers and insulation.

11. When moisture in the form of water vapor condenses into droplets.

12. Plastic sheets that are used for ventilation and restricts the passage of moisture.

13. Sheets of insulation with a foil side and has fiberglass or some other heat resistive material attached to it.

14. Manufactured heat resitive boards that are primarily attached to exterior walls

15. Another term for vapor barriers.

16. Slatted air vents under the peaks of roofs to allow for ventilation.

17. Wire mesh that is fastened inside the louvers to prevent the passage of insects.

18. The space provided between louvers for the passage of air.

19. Ventilators that are manufactured and are ready for installation.

20. Roll edges of insulation that are stapled to a wall.

21. Insulation that is blown in by a blower machine.

[illegible]

[illegible]

a. [illegible]

b. [illegible]

c. [illegible]

8. [illegible]

a. [illegible]

b. [illegible]

c. [illegible]

d. [illegible]

e. [illegible]

f. [illegible]

9. [illegible]

a. [illegible]

b. [illegible]

c. [illegible]

d. [illegible]

e. [illegible]

10. [illegible]

11. [illegible]

[illegible]

[illegible] Date: _____

[illegible]

_____ [illegible]	1. [illegible]
_____ [illegible]	2. [illegible]
_____ [illegible]	3. [illegible]
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_____ [illegible]	5. [illegible]
_____ [illegible]	6. [illegible]
_____ [illegible]	7. [illegible]
_____ [illegible]	8. [illegible]
_____ [illegible]	9. [illegible]
_____ [illegible]	10. [illegible]
_____ [illegible]	11. [illegible]
_____ [illegible]	12. [illegible]

[illegible]

UNIT FIFTEEN: Interior Construction

IV. DOORS AND INTERIOR TRIM

RESOURCE MATERIALS:

1. Textbook (Unit 17)
2. Classroom resource materials
3. Resource Center
4. On-site construction through independent study

STUDENT RESPONSIBILITY:

A. 1. Read unit in textbook.

2. Familiarize yourself with all resource materials including F.H.A. codes

B. 1. Complete Unit Fifteen (IV) Math Review. Submit for grading.

2. Complete Unit Fifteen (IV) Communications Terminology. Submit for grading. Be prepared for testing before Formal Summary.

C. In a written report, discuss the following:

1. F.H.A. codes pertaining to the following:

a. interior doors

b. interior wood trim

c. other millwork

2. In modern construction all interior doors are purchased as pre-hung units. Understanding of the construction of pre-hung units is essential in the proper installation of these units. Discuss the following factors:

a. interior door frames

b. installing door frames

c. hanging door

d. installing casing

e. door locks and installation

3. Discuss the following door types:

   a. panel doors

   b. flush doors

4. Discuss procedure for installing split-jamb type door unit.

5. Discuss the following door types and installation procedures.

   a. sliding doors (pocket type):

   b. sliding doors (bypass type):

   c. folding doors (bi-fold type):

6. From your plan, determine number, sizes, and types of doors required. Also determine if the swinging doors are left or right hand doors.

7. On aluminum framed windows, the apron and stool are the only millwork required. Discuss installation procedures of these millwork finish pieces.

8. Describe procedures for installation of door casing and base shoe.

9. From your plan, determine required footage and cost of the following:

   a. aprons

   b. stools

   c. door casing

   d. base shoe

10. Upon completion, submit for grading.

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Unit Fifteen: Communications Terminology NAME:_____

IV. Doors and Interior Trim

_____ side casing
_____ miter
_____ bypass door
_____ panel door
_____ stool
_____ hollow-core door
_____ split-jamb door
_____ flush door
_____ base shoe
_____ baseboard
_____ pocket doors
_____ door casing
_____ solid-core door
_____ mullion trim
_____ apron
_____ head casing
_____ folding doors

1. Also called stile and rail door. Panels are installed between stiles and rails.

2. A door that has an interior wood frame with thin sheets of material applied to both sides.

3. Inside and outside door jambs that are nailed together when installed.

4. Doors that slide into a pocket in the wall.

5. Doors that slide on an overhead track and can bypass each other when opened and closed.

6. Pairs of doors hinged together and are suspended from an overhead track.

7. A door with an interior frame that gives an edge to the door but is hollow inside the frame; a thin sheet of wood is applied to the two faces.

8. A door that has a solid wood interior and thin sheets of wood applied to the faces.

9. A strip of wood that is applied to each side of the door to cover the space between the jambs and wall surface.

10. A piece of beveled trim applied against the wall immediately below the stool.

11. A type of moulding that is applied to the rough sill to finish the window opening.

12. A type of moulding that is used as trim around the perimeter of a floor where it joins the wall.

13. Small narrow moulding used around the perimeter of a room where the base meets the finish floor.

14. A type of moulding that is used as casing on the side of windows.

15. A type of moulding that is applied between a head jamb and the wall surface.

16. A type of moulding that is applied in the joint between a door panel or window glass and the mullion of the door or window.

17. Cutting moulding at a 45 degree angle.

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Unit Fifteen: Math Review

NAME: _____

Show your work on this paper.

1. 29,316 + 7,894 + 5,622 + 35,278 = _____

2. 8 13/16 + 2 3/8 + 1 3/4 + 6 1/2 = _____

3. Subtract fifty-eight thousandths from four hundred thirty-seven thousandths.

4. 12 7/16 - 8 3/4 = _____

5. 16 2/3 x 3/5 = _____

6. 35% of 60 = _____

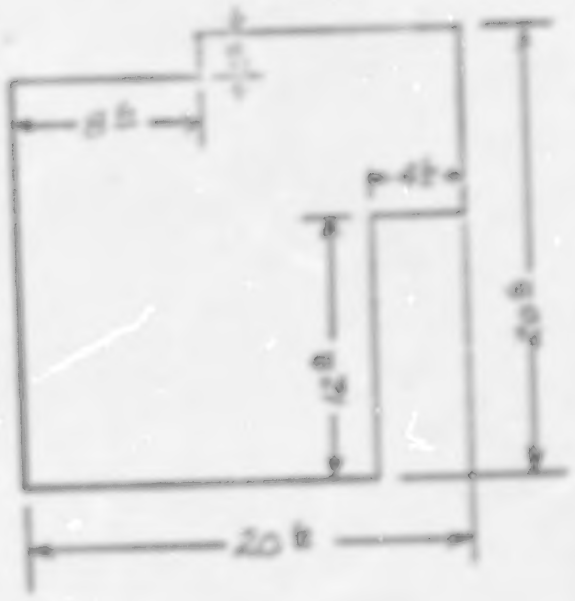
7. 30% of _____ is 27.

8. If a storage bin is 18' long, 9' wide and 7' high, find the number of cubic yards of storage space in this bin.

9. How many board ... on 54 12 foot 2" x 6"?

Math Review continued

15. Find the area and perimeter of the plan shown in this drawing.



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Interior Construction: Formal Summary

DIRECTIONS: Listed below are pertinent terms and phrases dealt with in this unit. Discuss how each is important in the correct installation of interior finish features of a residential structure.

1. Discuss differences between:

   a. conduction
   b. convection
   c. radiation

2. Basically two types of insulation are used in this area. Discuss types and where used.

[illegible]

A. [illegible]

B. [illegible]

[illegible]

5. [illegible] [illegible] [illegible]

[illegible]

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Unit Sixteen: Math Review NAME: _____

1. Add: 5' 2 3/4", 7' 6 1/8", 3' 2", 4' 1½" _____

2. Subtract: 9' 6 7/8" from 15' 4¼" _____

3. Multiply: 9' 5" by 5 _____

4. Divide: 8' 6" by 6 _____

5. Change: 15' 3" to inches _____

6. Change: 67 3/4" to feet and inches _____

7. Find the cost of 3,450 bd. ft. at $135 per M. _____

8. 20¼ ÷ 4½ _____

9. Find the area of a floor 29½' x 19 3/4'. _____

10. Contractor's price is retail price less 15%. What is contractor's price on a power saw that retails for $69.95? _____

11. What is the wall area of a room 11' x 14' if it has 8' ceilings? (Disregard window and door openings) _____

12. Find the cost of 9 pcs. 2" x 4" x 14' at $98 per M. _____

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Interior and Exterior Painting: Formal Summary NAME: _____

Directions: Listed below are pertinent terms and phrases dealt with in this unit. Discuss how each is important in the correct application of interior and exterior paints and finishes.

1. Discuss F.H.A. regulations pertaining to painting wood siding and exterior plywood:

2. Discuss process of painting walls, ceiling, and finishing interior millwork of a bedroom:

Formal Summary continued

3. Discuss wood floor finish:

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